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This document consists of the two issues of "SET" published during 1989. Each SET issue consists of a packet of brief reports, leaflets, pamphlets, etc., all reporting on educational research and designed for private study, staff-meetings, in-service courses, or small group discussions. (LL/ND)

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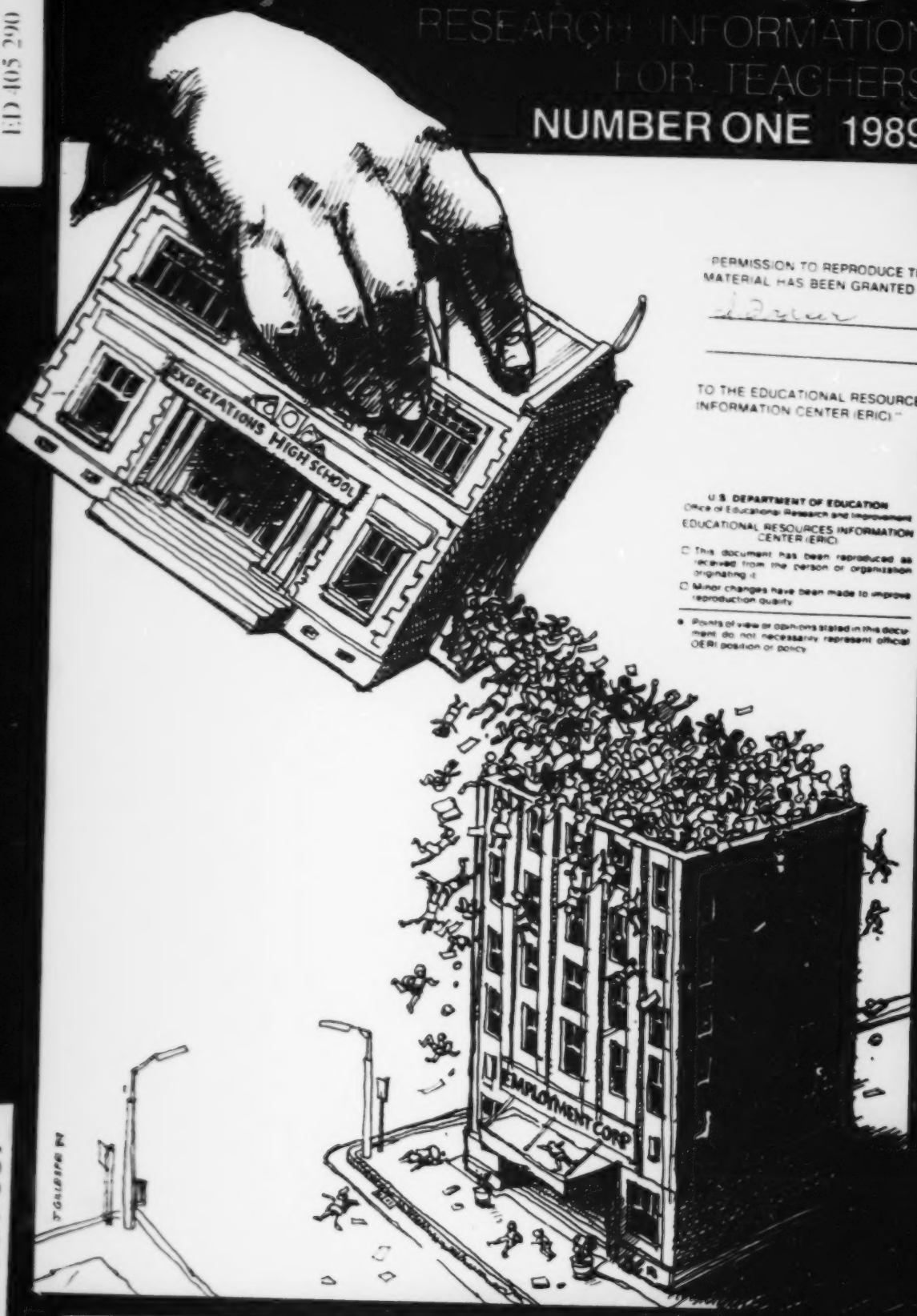

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Inflated Expectations, Qualifications and Job Prospects

By Ivan Snook

Massey University

The Prevailing Wisdom

THE STRESS on 'getting your qualifications' has become such a dogma that in New Zealand secondary pupils recently received a personal letter from the Minister of Education encouraging them to stay on at school. In this he gives support to the **prevailing wisdom**. Unfortunately staying at school is promoted by many others too: academics, school principals, the press, careers advisors, parents, and even by young people themselves who often blame their unemployment on their failure to get their school qualifications.

This conventional wisdom leads to two results, (1) a social and educational policy (reinforced by almost everyone) encouraging young people to stay on at school, and (2) advice to all, *regardless of circumstances*, that they should stay on at school and improve their chances of a job. There is a widespread belief among experts that unemployment is long-term and hence our ability to get clear about this question of qualifications is fundamental to the well-being and happiness of our youth and to the growth and stability of society. If the conventional wisdom is right, stronger efforts may be needed, perhaps to the extent of a massive rise in the school leaving age. If, however, the wisdom is astray, such proposals may do grave damage to our young people, society and, not least, to education itself. It is, then, an important issue and should be debated widely.

Distinctions

A crucial distinction is that between 'qualifications' and 'credentials'. As always, the words used do not matter much. It is the distinction that is crucial. Some words have to be used to mark it and I shall use the familiar 'qualifications' and 'credentials'.

Qualifications are 'pieces of paper' which certify authoritatively that those holding them have undergone a period of training which has fitted them to perform tasks which otherwise they could not perform. Thus, for example, a motor mechanic's certificate, a nursing diploma, and a law degree are qualifications. In the most obvious cases no-one in her right mind would employ anyone for a task without the appropriate qualification (e.g., an airline pilot, structural engineer, electrical service person, or surgeon). In other cases, however, the connection is not that tight. There have, no doubt, been some very good teachers who had no teaching qualifications and there are self-taught carpenters, cooks and company administrators. It is always a moot point to what extent certain qualifications are really needed and to what extent they are 'union' or 'professional' devices to protect the guild. But at any rate they usually certify that the holder has particular knowledge and skills which are directly relevant to the job.

Credentials, however are different. They do not certify the holder as trained to do anything in particular. At best, they indicate that the person has acquired the knowledge and skills of a general sort which are relevant to all kinds of different occupations – general degrees in science or the humanities are obvious examples. So are school-based credentials such as Sixth Form Certificate or Higher School Certificate. At worst, they merely indicate that a person has undergone education or training for a specific period of time. In Australian statistics, completion of Year 10, or Year 12 becomes a surrogate credential which employers can use in the selection process. It is here that the real problem of 'getting your qualifications' really begins.

Two views

Two extreme views highlight the dilemma. On one hand there are those who see credentialling as a perfectly rational process: jobs are becoming increasingly sophisticated and complex and ever higher cognitive skills are required to ensure the maintenance and growth of a modern economy. This position is the lynch-pin in the conventional wisdom about unemployment. It is the **official view**.

The other extreme, the **radical view**, is that the schools are nothing more than vast sorting machines. Like a huge conveyer belt for grading apples, the school progressively feed out candidates for unskilled manual jobs, skilled manual jobs and finally, the professions. The feeding out points are *quite arbitrary*, have nothing to do with education (or logic), and depend solely on the state of the economy. Thus, fifty years ago unskilled labour was fed out well before the end of primary school; completion of primary school marked the achievement of skilled and white collar status, while anyone who carried on through high school was virtually guaranteed a high status position. Today (on this view) nothing has changed except that credentials have become *inflated*. Just as money inflates so that $100 will buy much less than it once did, so a school credential (say, completing Year 10/Form 5) which once 'bought' so much 'status' will now 'buy' very little. It isn't that more *schooling* is needed, only that a higher *credential* is demanded. The 'piece of paper' is an essentially arbitrary means of reducing the size of the pool from which employees will be drawn.

The Official View

The official view faces formidible objections. If it were true, three things would also be true: (1) most jobs today would require higher level skills than they did before, (2) there would be few workers 'underemployed', that is employed at levels for which they are overqualified and (3) higher retention rates at schools would lead to reduced unemployment. Sadly for the official view, none of these is true.

(1) Jobs are not requiring increasing degrees of knowledge and skill – quite the reverse. There are, of course, some highly skilled jobs which require depth of knowledge but these are by and large those which have a clear *qualification* anyway – scientific research, computer management, law, and the like. Most of the others do not require extra expertise. Where once an early school leaver

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Table 2
Vacancies and Employment in Select Recent Months
(Compiled from Australian Bureau of Statistics sources)

Date	Labour Force	Employed	Unemployed	Vacancies
Aug/Sep 1986	7,593,300	6,959,100	634,200	50,000
Nov/Dec 1986	7,657,900	7,017,700	640,200	51,000
Feb 1987	7,672,600	7,040,500	632,100	63,000

could secure a bank job, an advanced school credential is now required. But far from the knowledge base having increased it has actually decreased. Automatic machines and specialised telling services have rendered many bank officers no more skilled than check-out operators. And this is happening in factories, government departments, service industries and most other areas where large numbers are employed. It is called de-skilling, and unions are well aware of its steam-roller effect. While it is true to say that the 'country needs skilled labour' it is false and politically misleading to imply that it needs a large supply of skilled labour.

(2) Although it is difficult to quantify and get statistics on, it is clear that many 'qualified' people take jobs that are 'beneath' them, that is jobs of lower status than they feel their credential is worth. The statistics people call this 'invisible **under**-employment' and contrast it with 'visible under-employment' (such as part time or seasonal work). Because they find it hard to measure 'invisible under-employment' they tend to ignore it. It is real nevertheless.

The economist Blaug puts the matter bluntly:

> The notion that most jobs in a modern economy require high levels of literacy and numeracy, and increasingly so as industry becomes more sophisticated, has been productive of a whole series of misdirected educational reforms.
>
> The truth of the matter is that most jobs in a modern economy require about as much cognitive knowledge and psychomotor skills as are used to drive an automobile.

(3) Unemployment does not decrease as the general level of education rises. In most of the major industrialised countries (perhaps all, but I do not have that sort of evidence), two changes have come about between 1974 and the 1980's: (a) there has been a massive increase in youth unemployment and (b), there has been a great increase in the number of young people getting credentials.

Defending the Official View

On all counts then, the official view is quite wrong. At this point, however, its proponents can readily shift their ground and go on the offensive. The problem is, they tell us, that schools, universities and other educational institutions have been teaching *the wrong things* and this explains both why schooling hasn't reduced unemployment and why so many are under-employed.

There are several reasons why this modified version is as unsuccessful as the original one. It fails to give any clear account (or usually any account at all) of what sort of 'skills' are needed to solve the problem. Unable to give them, proponents tend to fall back on general cognitive achievements such as reading, writing and computing. This, of course ignores the point made earlier that most jobs do not really need these general cognitive skills.

The End of the Official View, 1

There is moreover a knock-down argument to the official position. One can go on holding the official position only by totally ignoring the evidence. (That the evidence is consistently ignored in all the countries I have studied is a great tribute to the strength and political importance of the myth.) Let us restrict ourselves to Australia on this one; New Zealand figures are harder to find but show a similar pattern.

Between 1977 and the mid-1980's the number of unemployed in Australia rose from approximately 400,000 to approximately 700,000. Tables 1 and 2 present the picture since 1983.

Table 1
Vacancies in Selected Months November 1983 – May 1986
(Compiled from Australian Bureau of Statistics sources)

Month and Year	Job Vacancies (round figures)
November 1983	30,000
February 1984	45,000
August 1984	38,000
February 1985	40,000
February 1986	60,000
May 1986	50,000

During these years the number of persons unemployed was moving towards 700,000, so there were seven hundred thousand people looking for employment and forty to sixty thousand vacancies. The difference is about 650,000, for whom there were no jobs at all. This rather schematic picture can be filled out by examining Table 2.

These figures show conclusively that there are (consistently) at least 10 people for every vacancy. Month after month, year after year, some half million people have had no job to go to no matter what the schools/colleges/universities have taught.

The official view in both its forms is totally discredited. (This does not mean that it will lie down and die – its political role is too crucial. In a matter as central as this a false theory can be as politically effective as a true one – perhaps more so.)

Too Young or Too Old

Perhaps, you have agreed with the general thrust of the argument. But you may now be saying, 'But unemployment *is* a youth problem; the unskilled *are* the worst hit; we have to do *something* for these kids; and surely the education system (broadly construed) has something to contribute, at least towards the alleviation of the problem of unemployed *youth*.

It is clearly true that in all countries unemployment falls heavily on the young. Table 3 give the unemployment rates for various age groups in Australia.

Table 3
Unemployment Rates (%) by Age (Males)

	15–19	20–24	25–34	35–44	45–54	55+
1977	15.8	7.2	3.2	2.9	2.5	2.5
1983	23.0	17.3	9.1	6.0	5.9	6.5
1986 (estimated)	18.7	12.3	6.8	4.6	5.5	5.5

(Australian Bureau of Statistics 6101 1986)

Although six percent of people over 40 are unemployed, it is clear that major unemployment is clustered below 25

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years of age. The unemployed over-40s are typically people put out of work not because they 'haven't the qualifications or experience' but because they are no longer needed. Indeed, age itself is becoming a crucial factor. According to the Australian Bureau of Statistics (6101) 1986, 27% of the long-term unemployed were considered 'too old or too young'. As we consider the view that one must have the right credentials, it is important to remember that one must be the *right age*, and the *right sex* sometimes. While discussing age it should also be noted that as people get older they are more likely to be out of work for a long time.

Average time out of work

	1977	1986
Those over 35:	20 weeks	70 weeks
15–19	20 weeks	30 weeks

(Australian Bureau of Statistics, 1986, p. 63.)

The End of the Official View, 2

It is also true that those with fewer credentials are most likely to be unemployed. It is this fact above all else which provides ground, of a sort, for the official view. The following break-down is fairly typical.

Table 4

Unemployment Rate (%) by Educational Attainment February, 1986

	15–19	20–24	All ages
With post-school qualifications	16.7	9.2	5.3
degree	n.a.	10.7	3.8
trade-technical	14.6	8.4	5.4
Without post-school qualifications	22.6	13.8	11.1
attended highest level	19.3	11.7	10.4
did not attend highest level	24.3	15.0	11.2
left at 16 or over	22.3	11.9	11.2
left at 15 or under	26.9	20.0	11.3

(Labour Statistics Australia, 1986, 6101, p. 69.)

As with all such statistics, interpretations vary depending on where one looks and how one looks. Viewed uncritically they might be taken to support the official position, but they do not.

(1) The differences though consistent are relatively small; they could not justify a strong social policy.

(2) As we have already seen, age itself is used as a screen and hence the younger school leavers are at a disadvantage for that reason alone.

(3) At a time when there is such pressure on young people to remain at school, those who leave before 16 may themselves be a distinct class of youngsters, uninterested in learning, poorly motivated in general, of lower socio-economic status, etc. They do not compete well for the available jobs.

(4) The statistics take no account of the phenomenon of **under**-employment. In times of massive unemployment, people with advanced credentials take on jobs that are beneath what they would normally have expected and this has a trickle-down effect until it reaches the lower level. This deflates unemployment figures for the more skilled levels and inflates those at the unskilled. Imagine the effect on the statistics if every trained teacher, nurse and tradesman who happens to be doing a job below his or her skill level were classified as unemployed. If honest arguments are to be squeezed out of this kind of data, statistics on under-employment are essential.

Things are Changing?

But, perhaps, as is often said, the situation is changing. Thus, it is argued, credentials did not figure much in the past but are becoming increasingly important. However, the statistics I examined did not even support that. Table 5 is of considerable interest:

Look at the unemployment rates of those who stayed at school and those who left early. They are remarkably similar. Also remarkable: these rates have remained fairly constant in the face of rising unemployment.

Of even greater interest is the fact that the highest unemployment is among those who have undertaken some further education including those who have taken courses *specifically geared towards getting the 'skills' needed in the job market*. Their rate of unemployment is higher than those who took no further education at all, including those who left school 'prematurely'. I present this slightly tongue-in-cheek for, of course, in recent years, work preparation courses have often been taken by those most unlikely to find work. Nevertheless statistically speaking, the worst thing for young persons to do to enhance their chances of a job is to undergo further training unless the training is specifically related to gaining a degree or trade *qualification* (as distinct from a credential). Even then the person should not be too sanguine – by investing considerable time (possibly four years), the school leaver will have improved her chances of being unemployed from 10% to 5%, and in the meantime most of her contemporaries will have found work anyway.

The Blind leading the Blind

It is highly instructive to see a prestigious panel of OECD examiners twisting and turning to respect the facts *and* to sustain the official story. The following quotations tell their own sorry tale:

> Most people enter the labour force with less than twelve years of education and no specific occupational skill. There is a need to assure a higher minimum level of preparation for working life (and adulthood) as well as to increase the proportion with technical skills.
>
> (p. 11)

> The most important explanation for [youth unemployment's] sharp increase in 1982 and the current high level is general macro-economic conditions.
>
> (p. 14)

Table 5

Qualification and Rate of Unemployment (%) 1979 and 1986

	With post-school qualifications			Without post-school qualifications	
Year	degree	trade*	other**	Stayed until the end	Left before the end
1979	2.8	4.7	9.4	8.0	8.4
1986 (estimated)	3.8	5.4	13.3	10.4	11.2

* includes nurses and other skilled para-professions

** includes adult education, bridging courses, work preparations courses

(Labour Statistics, Australia, 1986, ABS 6101, 0, p.68.)

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> By one calculation, the net job deficit that has to be made up in order to get teenage unemployment down to levels preceding those of the past decade of stagflation, is more than 140,000 jobs. If young people were to keep their share of the labour force, this would require more than 1.3 million additional jobs in Australia.
>
> (p. 15)
>
> Education and Training policies represent one strategy for assuring that, as the nature of the economy changes, the qualifications of young people entering the work force will also change.
>
> (p. 19)
>
> The education and training arrangements in Australia are premised on the labour force needs of an industrial economy. . Such notions are dangerously obsolete in the post-industrial OECD economies where high technology and the service industry are growing in importance.
>
> (p. 28)
>
> In other OECD countries at the same time that youth employment has been declining, their enrolment in education and training has risen.
>
> (p.32)

To comment on their logic would be a waste of time. The official view is woefully astray in its understanding of the relationship between schooling and unemployment. Social policies based upon it not only constitute a political myth but continue to perpetrate a cruel hoax on our young people.

The Radical View

I do not, however, wish to fully endorse the radical view that schooling is nothing more than an arbitrary selection device, replaceable without loss by some other selection device (say, hair colour, zodiac sign, or I.Q. at age 10). Schools can convey important intellectual traits, social skills and moral attitudes and many young people benefit from lengthly exposure to schooling. Children get more from schooling than simply the opportunity to grow up and schools certainly do more than simply sort people out. Schooling (even prolonged schooling) can provide benefits to young people in the form of greater understanding of themselves and their world and greater degrees of competence in coping with their lives. But it doesn't work magically and is relative to the attitude of the learner. The awful danger of the official story is that it not only forces young people to attend school when they are not motivated to profit from it, but it also distorts the school curriculum away from work in arts, humanities, science and mathematics (which, I would argue, are of value to everyone, not just those planning tertiary work) towards relevant sounding 'subjects' which are of no use at all in job-seeking and may be of no educational value either.

It is, therefore, important to distinguish a social policy from the advice to be given to individual students.

Honesty in Policy

In the area of policy, governments and their advisors should stop putting out the discredited official view. If they want young people to stay at school for some other reason (e.g., to keep them off the streets) they should be honest and say so. There should be no financial incentive or disincentive to remain in school and every effort should be made to acquaint young people with the facts of unemployment. School principals and others should stop mouthing global claims about the importance of qualifications and teacher unions cease to stimulate work for members by telling young people lies. Right through high school, unemployment itself should be an important component of the curriculum so that all pupils know in general terms what the situation really is. A new era of honesty would be a good start to policy for the 1990's.

Advice

What about advice to individual students? What should a careers advisor, counsellor, dean or friendly teacher say to the young person who approaches her for advice about schooling, qualifications and credentials? While no recipe can be given and sensitive inservice training is imperative, the following points are salient:

(1) There should be no presumption either way. The statistics are of no use in individual counselling. So, 'Should I stay at school?' should be in every case an utterly open question.

(2) A central point is the student's own wants, particularly if they are strong. Those who are enjoying school should be encouraged to stay on, providing they are aware of the fact that so doing may decrease their chance of the sort of job they have in mind. People *can* be overqualified. On the other hand people who feel they have had enough of school and are getting no satisfaction from it should not be encouraged to stay, unless they have a job ambition for which qualifications are needed. They may then have to face the fact that one must sometimes take unpalatable means to get to desired ends. Even here, however, the possibilities of second chance education should not be discounted.

(3) The counsellor must, then, take account of the abilities of the young people. While their wants are important, their abilities are also important. Students may have quite unrealistic aims and, while great care is needed in these matters, they may need to be helped to adjust their aspirations.

The important point is this. Once the official view is properly discarded, the way is open for a genuine, open and productive dialogue on each person's future. At present the 'party line' is so noisy that no genuine dialogue is possible. Hence young people feel themselves pushed along by forces over which they have no control or, believing themselves to be at fault, become alienated from their society, school and friends. If youth unemployment is now a structural reality, ways must be found to minimise the deleterious effect on the young.

Notes

Professor Ivan Snook teaches at Massey University, Private Bag, Palmerston North, New Zealand.

The quotation from the economist Blaug can be found in
Blaug, M. (1986) 'Where Are we Now in the Economics of Education'. In John Freeland, *The Political Economy of Schooling* Deakin University Press.

Evidence for the great increase in the number of young people getting credentials is in
Payne, Joan (1985) 'Changes in the Youth Labour Market 1974-1981', *Oxford Review of Education*, Vol. II, No. 2 pp. 167-179.

The OECD commission published its report as
OECD (1968) *Youth and Work in Australia: A Contemporary Policy Agency*, Pevis OECD.

This item is from a paper given at the New Zealand Association for Research in Education Annual Conference Dec. 1988, at Massey University, called *You've Got to Get Your Qualifications*.

An earlier paper on a similar topic, with the Australian statistics, is
Snook, I.A. (1988) 'Unemployment and the Schools'. In David Corson (ed.) *Education for Work*, Palmerston North: Dunmore Press.

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Managing Energy in Schools

By Nigel Isaacs, Michael Donn, Harry Bruhns & George Baird
Energy Research Group, Victoria University of Wellington

Nicola Chadderton

Introduction

IMPROVED ENERGY MANAGEMENT IN SCHOOLS would produce significant cost savings. Only a small number of schools will make big savings but a large number of schools will be able to make worthwhile savings. However, many schools should look for savings in other areas, for example, text-book management, which may give a better return. The first step in improving energy management is to identify to which category a school belongs.

This article starts with a brief history of our research over the past ten years. A review of the problems of managing energy is followed by a discussion on the use of energy in schools. A brief guide to the ways energy can be saved should provide some ideas for schools with energy management problems. The article is completed with an energy management worksheet. The worksheet offers a very simple categorisation method to permit a school to determine whether it is worthwhile to invest time and resources into reducing energy expenditure.

Research History

For schools, as with most non-residential buildings, energy is only a minor component of operating costs. However, unlike office buildings, which are often air conditioned, school buildings are usually naturally ventilated with heating provided from a central boiler to permanent classrooms and stand-alone heaters in temporary blocks. Schools also differ in that they have had in the past regular maintenance co-ordinated by an Education Board or a regional office.

The Energy Research Group (ERG) at the Victoria University of Wellington School of Architecture, has been involved in the study of energy use in non-residential buildings since 1976. Energy use in New Zealand schools was first investigated in 1978 when students of the *Energy in Architecture* class studied 16 Wellington primary schools and found wide, apparently inexplicable variations in energy use.

During 1979 and 1980 ERG collected comprehensive energy data for primary schools and in 1981 conducted a similar exercise for secondary schools. The report on the survey programme was presented in 1984. It was found that energy use was more closely related to school size measured

by building area than by the number of pupils. This follows patterns found in other non-residential buildings and may result from the need to heat the building, regardless of the number of people using it.

The study found that while half of the variation in energy use between individual schools could be attributed to physical size and climate, the rest was most likely due to variations in building design, building operations, differing levels of maintenance and general energy management.

The study also predicted that 16% of energy expenditure could be saved by improved energy management. New Zealand schools in 1983 had Light, Heat & Water expenditure of $15.2 million. There could have been annual savings of $925,000. The situation has not improved, energy expenditure four years later rising to $29.0 million. The underlying problem is that information on energy costs is not getting to those who manage energy use. The energy management/information loop is not being closed.

In 1985 ERG commenced a project to test energy management techniques in a small number of schools. Following the previous work, the Department of Education had required schools to report their energy expenditure by fuel type. An initial examination of the 1985/86 Light, Heat & Water expenditure from 268 secondary schools was followed by the selection of a number of schools for detailed study and action. Three Wellington and four Christchurch secondary schools were monitored with electronic data loggers during the 1986 winter, before and after actions had been taken to improve energy management. Savings in energy costs ranged from 30% to 50% – far exceeding the original estimated. Some savings required new controls (maximum cost $10,000) while others could be achieved through improved control of the equipment (no-cost).

In 1988 a brief follow-up project has been running to confirm that the energy savings achieved during 1986 are ongoing. The work will be completed in 1989.

Managing Energy

For an individual school with limited funds, wasteful energy use cannot be solved by demolishing a few badly designed buildings or throwing away the heating system. Nor is it likely to be completely cured by changing the habits of teachers and pupils. Our research concluded:

The reason for excessive energy use in schools is that energy is not managed.

What has been happening is that there has been a one way flow of energy management information:

1. the *caretaker* ran the system day-by-day: e.g., if it was cold the pupils complained to the teachers who talked to the principal who discussed it with the caretaker and the heat would be turned up;
2. the *school* received the fuel bill and certified the account;
3. the school *administration (Education Board, Secondary School Council* etc.) paid the bill because it had been certified;

and finally

4. the *Government* refunded the expenditure, the correct procedures having been followed.

At no time was the management/information loop closed: the principal saw individual bills, but was not able to evaluate them as part of the school's total energy expenditure; the school administration paid the bill but knew little of the school's function. The people who could influence the energy use (principal, caretaker, maintenance supervisors etc.) did not have enough information to evaluate the energy use.

In New Zealand this 'system' is changing. A bulk grant will be provided to the school to cover school operating costs – including maintenance and energy. The amount of this grant that a school has discretionary power over will be small. If energy expenditure is allowed to grow without control, the discretionary amount will become even smaller. Each school will need to ensure that everyone who can influence energy use is informed about the use of expensive energy or valuable funds may be wasted.

Using Energy

Schools employ energy, in the form of different fuels, for many purposes:

PURPOSE	FUEL
Heating	Coal, Oil, Electricity, Gas, Wood
Swimming Pool	Electricity, Gas, Coal
Lighting	Electricity
Equipment	Electricity
Lifts	Electricity
Cooling	Electricity
Kiln	Electricity, Gas, Oil, Wood
Cooking	Electricity, Gas
Laboratory Burners	Gas

This list is not exhaustive – other fuels may be used depending on local conditions. Some uses may be insignificant – for example the use of gas in laboratories.

In some schools energy used for other purposes than heating and lighting may be very expensive. A surprising amount of energy can be used to maintain a swimming pool – particularly electricity for the pumps which may be left on outside the swimming season.

Electricity is normally the most costly part of the energy budget, with the heating fuels next. In our experience, other than for obvious waste such as swimming pool pumps running unnecessarily, non-heating use of electricity is the most difficult to reduce. It is generally easier to detect and correct problems with the heating system.

School energy use is mainly determined by three factors:

1. *Size* of the school – measured by the area of the buildings. For greatest accuracy, the area should be the 'heated' area (i.e., excluding outdoor toilet blocks, tractor shed, unheated gymnasium etc.) However if only a 'total' area is available, the error is relatively small. For multi-storey buildings, the total floor area will be the sum of the area of each floor.
2. *Operating Hours* – how long the school buildings are in use and being heated. The relationship between school operating hours and energy use has not been clearly established, but evidence from other non-residential buildings suggests that in a properly run school, energy use increases in proportion to increased operating hours (for example night classes, weekend classes etc.)
3. *Climate* – particularly, how cold it gets in the winter, compared to other locations.

Our Climate Factor is based on an 'average' Wellington winter being equal to 1.00. Using the 'average' coldness means that if the winter is very cold or warm, then the heating energy consumption will be under-estimated or over-estimated. A correction factor could be applied, but would be of only limited accuracy. There are many other aspects of the climate that will affect school energy use: for example the wind conditions, humidity and sunshine are also important.

Daylight is also important with respect to the amount of electricity needed for lighting. Overseas research in office buildings has found that daylight conditions first thing in the morning matter more than light through the day. People going into a room turned the lights on, and then left them on regardless of the changing conditions.

Worksheet Instructions

Worksheet

Instructions

A pencil and a calculator are required:

1 You need the following data before commencing the worksheet:
   - *Expenditure by fuel type for 1987*: The comparison is based on 1987, but given the low recent inflation, 1986 or 1988 should not cause problems.
   - *School area*: Count the number of classrooms heated or lit by each fuel. Include halls, gymnasium etc., which are in regular use as 1 classroom each.

2 Complete details at the top of the Worksheet. Contact name is to ensure that whoever follows up next year can check back in case of problems.

3 Fill the worksheet row by row. Enter number of classrooms for each fuel. Multiply and enter results.

4 Work out the *Operating Hours Factor*. The blank table on this page can be filled in to help get there. Use an 'average' winter week as your guide. Use the factor *1.00* if the school is open for less than 37.5 hours. Enter the *Operating Hours Factor* on the worksheets, multiply, and enter the results.

5 Look up the *Climate Factor* (on this page) and enter on the Worksheet. If your location is not on the table, then use a nearby location with similar winter weather. Multiply, and enter the results.

6 Add the two worksheet numbers for 'Electricity' – heating and light, and enter on the Worksheet.

7 Transfer all Subtotals A

8 Enter the actual fuel costs on the Worksheet. Divide to generate your school's Fuel Cost Index for each fuel.

Note that less reliance should be placed on oil use than for the other fuels. An index of greater than 2 suggest significant savings through improved energy management. If your results are less than 1 (less than 'average') then although savings may be possible, your energies may be better spent on other opportunities. Special equipment that uses large amounts of energy, e.g., a pottery or metal kiln, may give an index greater than 1, but may still indicate acceptable energy management is at work in your school.

Australian Schools

Australian schools can complete the worksheet, but comparisons should not be made to New Zealand base expenditures. Schools in a town or city area could compare results amongst themselves. Obviously, if you are in the same area, then you are in the same climate, and no climate factor is required.

Operating Hours Factor

Operating Hours Factor is based on the formula:

$$\text{Factor} = \frac{\text{Operating hours}}{37.5}$$

Example

School open	Total Hours	Factor
8:00 am – 3:30 pm	37.5	**1.00**
8:00 am – 4:30 pm	42.5	**1.13**
8:00 am – 5:00 pm	45	**1.20**
8:00 am – 3:30 pm, 7:00 pm – 9:00 pm	50	**1.33**

Fill this in to help you get your **Operating Hours Factor**

Day of Week	Day time hours	Night time hours	TOTAL HOURS
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			
TOTAL			
Divide by 37.5 to get **Operating Hours Factor**			

Climate Factor

Location	Factor
Alexandra	**1.37**
Auckland	**0.56**
Blenheim	**0.98**
Christchurch	**1.18**
Dunedin	**1.25**
Gisborne	**0.78**
Hamilton	**0.89**
Hokitika	**1.15**
Invercargill	**1.49**
Masterton	**1.06**
Napier	**0.78**
Nelson	**1.09**
New Plymouth	**0.88**
Palmerston North	**0.93**
Rotorua	**0.99**
Tauranga	**0.74**
Wellington	**1.00**
Whangarei	**0.57**

WORKSHEET

School _____ Date _____

Address _____ Contact _____

_____ Phone (STD) (_____) _____

Date for year from _____ to _____

	Coal	Electricity		Oil	Gas
	Heat	*Heat*	*Light*	*Heat*	*Heat*
Base Cost per Classroom (1987)	$170	$500	$200	$360	$240
	x	x	x	x	x
Number of Classrooms on each fuel					
	=	=	=	=	=
	x	x	x	x	x
Operating Hours Factor (From operating hours table (same for each column)					
	=	=	=	=	=
	x	x	x	x	x
Climate Factor From climate table (same for each column)					
	=	=	=	=	=
			+ =		
Subtotal A transfer below		Combine electricity			
Actual Costs for 1987 ($) From school accounts					
	÷	÷		÷	÷
Subtotal A from above					
	=	=		=	=
Fuel Cost Index					

Note: the Base Cost figures are subject to considerable error – this analysis must not be used for planning purposes.
If the Fuel Cost Index is **greater than 2**, significant savings are possible through improved energy management.
If the Fuel Cost Index is **between 1.5 and 2**, some savings may be made, depending on the way the school uses energy.
For example a pottery kiln or a heated swimming pool may cause energy use to be greater than the 'average' but still reasonable for your school.
If the Fuel Cost Index is **less than 1**, although savings may be possible, your energies may be better spent on other opportunities.

PLEASE COPY THE ENTIRE WORKSHEET AS REQUIRED.

This research is on-going and would benefit from a copy of your completed worksheet.
Please send it to:
Energy Research Group,
School of Architecture, Victoria University of Wellington,
P.O. Box 600, Wellington, New Zealand

Saving Energy

It is easier to waste energy than to manage it efficiently. Once you know your school is spending more on energy than is needed, it still may be difficult to work out why energy is being wasted. You need to know about: the site; the buildings; the operation of the school; the age and design of the heating system; the operation of the heating system; and the maintenance of the heating system.

How much effort should a school put into saving energy? This should depend on the size of any savings that can be achieved. The worksheet will help you compare your energy use (after making allowance for size, climate and operating hours) with a hypothetical 'average' school, but the total expenditure is also important. If your school spends only $500 a year on energy, a saving of 10% would only be $50 and other (non-energy) management may give a better return. Conversely, if your school spends $50,000 on heating, and your costs per unit area are twice those for an 'average' school, then savings of 10% would give you more than $5,000 – a very worthwhile return.

Excessive energy use almost always suggests that somewhere information is not getting to those able to use it. The information feedback loop must be clearly established to achieve effective, ongoing energy management. Our research has suggested information is needed on three key topics to determine why energy is being wasted:

1. *Heating System*
   Does the heating system operate satisfactorily? Indications of failure can be obvious (e.g., teachers have to open or close windows through the day to control classroom temperatures), or more subtle (e.g., the whole school has to be heated when only one room is used for night classes). In one school we investigated, there were no complaints about the heating but considerable money was being spent. We found the boiler was operating 24 hours a day as the boiler controls had failed!

2. *Energy Expenditure*
   Has there been a sudden (or even unexplained gradual) increase in expenditure from year to year? An increase may be due to sudden equipment failure or a lack of maintenance.

   Is all the money spent on school energy bills being used to buy the school energy? Many energy supply authorities have 'standing charges' for meters regardless of how much energy is used. An unused meter may cost over $100 a year.

3. *Buildings*
   Is the building working satisfactorily for the occupants? Indications of failure (in energy terms) include lights being left on regardless of natural conditions, or classrooms that are always cold. These may be due to initial design failure (for example poor placement of light switches), failure due to a lack of maintenance (e.g., windows no longer close firmly) or vandalism. Some building designs just use more energy than others.

In each case the problems, although indicated by inanimate objects such as boilers and switches, can be traced to human actions. And once wasteful energy use has been rectified, ongoing savings will be achieved only if adequate information continues to come to those able to take remedial action. In larger schools, this may require retraining caretakers to ensure they are able to deal with the complexities of the energy using systems. New equipment (e.g., heat pumps, computer controls, special lights) mean that even greater care will need to be taken to ensure that there is adequate ongoing maintenance.

Worksheet

A simple method for improving energy management is to estimate how much energy a school should be using, and then compare this with the actual energy use. However, school accounting systems deal only in dollars, so the worksheet has been designed to allow you to use that information. The use of expenditure in dollars gives lesser accuracy than if the amount of energy was recorded regularly – tonnes of coal, litres of oil, kilowatt hours of electricity etc.

The Base Costs per Classroom given in the worksheet are derived from four years of state secondary schools annual accounts. For 1987 we had *Light,Heat & Water* expenditures from 209 State Secondary Schools on a per classroom basis. *Electricity* expenditure was available for 208 schools, *gas* for 153 and *coal* for 140. *Oil* expenditure was only available for 29 schools, and thus the Fuel Cost index for oil may have a greater error range than for the other fuels. The use of a classroom count (one classroom is approximately 70 square meters) should make this method suitable for all types of schools.

The worksheet may give greater error for primary and (NZ) integrated schools for which we have no long-term data. Even so, the level of accuracy should be sufficient to give administrators, departments, boards, boards of trustees, local committees or the principal, guidance about the next steps to take concerning energy management. This is a gross measurement which will help to determine whether, or not, you have an energy management problem. A calculation of considerably greater sophistication is required should such a method be used for grant allocation.

The Climate Factor is based on 18°C Heating Degree Days, with Wellington having on average 2054 Heating Degree Days.

Fuels used for heating have different efficiencies of conversion; only a certain proportion of the energy in the fuel is actually turned into heat and delivered to the classroom. For the purpose of this simple comparison, these differences in efficiency have been ignored and we have concentrated on value for money.

ERG is continuing to research energy use in schools (as discussed in the Notes). Please send ERG a copy of the completed worksheet for your school, as this will assist in our work. If there is interest and enough schools send us completed worksheets, ERG will be happy to up-date the worksheet when information becomes available.

The worksheet is separate. Please photocopy as required. Detailed instructions are provided on the worksheet.

Conclusion

Light, heat and water costs for the New Zealand Department of Education increased by 90% between 1983 and 1988 – a rate far in excess of inflation. The costs of not undertaking a national energy management programme in school have been high. The changes in education administration, and what is hoped to be a fair and equitable allocation grant method for energy costs, will in New Zealand shift the need for such an energy management programme onto the school. If your school is not to waste money, it needs to keep track of its energy expenditure. The simple method described here is not intended to solve your energy problems – it is designed to help to identify whether or not you have a problem, and give school adminstrators a feel for the size of that problem.

Notes

The authors are all with the Energy Research Group, School of Architecture, Victoria University of Wellington, P.O. Box 600, Wellington: Nigel Isaacs is a Research Fellow who has been conducting this work since 1986;
Michael Donn is now a Senior Lecturer and Chair of the School of Architecture, but was the first research fellow involved with this work from 1978 to 1980;
Harry Bruhns is currently an Industrial Research Fellow and worked on this project from 1980 to 1986;
Dr George Baird, Reader in Building Environmental Science and Director of the Energy Research Group, has been involved with this work from its beginning.

The research summarised here is ongoing. ERG would be delighted to receive completed copies of the worksheet, along with any comments. We cannot offer advice by mail on the best solutions – that will depend on your school, its particular circumstances and the people involved. However we are most interested in your experiences with identifying and resolving building problems.

Acknowledgements:
The support (both financial and information) of the Department of Education has been the basis of this work.
The Climate Factor Table is based on the 'Building Energy Performance Targets' workbook designed by our colleague Peter Stenos and prepared by the Energy Research Group for the Works and Development Services Corporation NZ Ltd.

Further information:
Copies of the reports or papers prepared by the Energy Research Group and listed here are available at a nominal charge for photocopying and postage, given in brackets [ ].

The research is described in the two reports to the Department of Education:

Bruhns, H.B. & Donn, M.R. *SCHOOLS ENERGY REPORT – A Survey of Energy Consumption in Schools*. School of Architecture, Victoria University of Wellington. February 1984. 201 pages. [$40 – photocopy]

Isaacs, N.P. & Donn, M.R. *Closing the Loop – Improving Energy Management in Schools*. School of Architecture, Victoria University of Wellington. CRP 49. 1987. 104 pages. [$20]

and a published student research report:

The Energy in Architecture Class of 1978. *Energy Consumption in Wellington Primary Schools*. N.Z. Energy Research and Development Committee. Publication P16, May 1979.

Papers on various aspects of the research are:

Isaacs, N.P., Donn M.R. & Bruhns, H.B. *A National Energy Programme for Schools*. Third International Congress on Building Energy Management, Vol III. Ed A. Faist, E. Fernandes & R. Sagelsdorff. École Polytechnique Federale de Lausanne. Oct 1987. pp 348-355 [$1]

Isaacs, N.P. & Donn, M.R. *Improving Energy Management in New Zealand Schools*. Joint Conference of New Zealand and Australian Association for Research in Education, Christchurch, Dec. 1987 [$1]

Baird, G., Bruhns, H.B., Donn, M.R. & Isaacs, N.P. *Application of the Exo-Endo Model to The Measurement of Building Energy Performance*. In 'Performance of Buildings and Serviceability of Facilities' Ed. G. Davis & F.T. Ventre. ASTM STP 1029 [$1]

Isaacs, N.P. & Donn, M.R. *Energy Audits and Their Effect on Improving Energy Management*. To be presented to CIB 89 QUALITY FOR BUILDING USERS THROUGHOUT THE WORLD. Paris June 1989. [$1]

Isaacs, N.P. & Donn, M.R. *Runhour Meters – The Forgotten Energy Management Tool*. To be presented to IPENZ Conference, Dunedin, February 1989. [$1]

More general publications on managing energy in buildings from the Energy Research Group are:

Baird, G., Donn, M.R., Pool, F., Brander, W.D.S. & Chan, S.A. *Energy Performance of Buildings*. 1984. CRC Press: Boca Raton, Florida.

Isaacs, N.P. *Energy in Buildings – Four Rules for Better Management*. Accountant's Journal April 1988. Vol 67, No 3. pp 36-37. [$1]

Australian publications that offer assistance in examining energy use in schools include:

Pak-Poy & Kneebone Pty Ltd *School Energy Audit – SEA*. Published by the Department of Minerals and Energy, State of Victoria. 1979.

A.P. Carpenter (Cameron and Middleton Aust. Pty Ltd) *Schools Energy Study*. Published by the Australian Schools Commission. (Undated)

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item 4

'I Want My MTV'

set research information for teachers
number one 1989

Studying Music Videos in the Classroom

By Roy Shuker
Massey University

RECORDS, tapes and radio are central to adolescent experience and a key part is MTV – musical television – and its staple, the music video clip. 'MTV' itself is a 24-hour, non-stop, commercial cable television channel, beamed by satellite across the United States; devoted to screening rock videos.

Putting music and film together is, of course, hardly new, but the combination took off in the 1980s with the advent of cable television, along with dramatic advances in what was technically possible in television/video. The ubiquity of MTV and music videos is now a major cultural phenomenon. 'MTV' itself is enormously popular and profitable, and has fuelled the current boom in the American recording industry. In addition to 'MTV' (founded in 1981) and its host of imitators, we have the usual music video television shows, and

- feature films dominated by video-style (Flashdance; Absolute Beginners);
- television shows likewise (Miami Vice; Entertainment This Week);
- videos from movie soundtracks making the music charts while also functioning as adverts for the movie itself. (Footrot Flats, Queen City Rocker, Dirty Dancing);
- rock videos as ads., reshaping the language and format of advertising (Levi's 'I Heard Through The Grapevine' ad; 80 in the Shades' 'Heatwave' – L & P ad.)
- video 45's and full length albums increasingly available for home video systems;
- video bars and discos in the USA and Australia;
- record/fan magazines increasingly including reviews and chart listings of music videos, and the music industry annual awards for videos.

The study of MTV and music videos encapsulates the diversity of approaches evident in media studies, including: textual analysis; political economy; effects-on-society; censorship issues; and the uses and gratifications approach (i.e., the social functions of the medium for consumers).

Big Business and Cultural Imperialism

TO BEGIN WITH, MTV is Big Business. In 1984, the magazine *Billboard* estimated that $60 million (US) was spent by the music industry on over 1,500 3 to 4 minute 'promotional devices' (a polite term for advertisements). In the United States, 'MTV' now has many imitators and a European version ('Music Box') was recently launched. 'MTV' reaches nearly 20 million American homes, and 85% of 18- to 34-year-olds watch it regularly. There is a well-proven correlation between heavy rotation on 'MTV' and increased record sales. Begun in 1981 for an initial cost of $20 million (US), 'MTV' earned $7 million in advertising revenue in its first eighteen months of operation, and by 1984 was earning more than a million dollars a week from advertising.

In New Zealand, MTV style television programmes are very popular, especially among young people. A 1987 survey of 3rd form (Year 8) music classes at a local high school, showed that 95% of the students regularly watched *Ready to Roll*, 33% watched *Radio With Pictures*, and 26% watched *Heartbeat City*. It is clear that the viewers of these programmes want to watch (or, it could be argued, have become conditioned to expect) overseas-produced video clips. Here, a dispute between TVNZ and the record industry in mid 1986 is instructive. Prior to this, music videos were shown on TV on the basis that both sides got something out of it – TVNZ did not have to pay to make the videos that provided the bulk of *Ready to Roll*, *Radio With Pictures*, *Shazam*, and *RTR Video Releases*, nor did it pay record companies screening rights; record companies, on the other hand, got free advertising – not only free, but very effective advertising (e.g., Bruce Springsteen's *The River* sold 15,000 copies in NZ; *Born in the USA*, boosted by two videos sold 20,000). Pressure mounted in the 1980's however, for TVNZ to pay for the videos. Discussions became stalemated in April 1986, when the record industry asked TVNZ for $US27.30 per minute for clips – the standard rate paid by TVNZ for overseas programmes; TVNZ refused, and the companies stopped supplying overseas clips.

The effect on the popularity of the video-based shows was dramatic. If you compare audience levels for the last full week (March 30 – April 5) *before* the ban, and the first full week afterwards, *Radio With Pictures* lost 42% of its viewers, *RTR Video Releases* 67%, *Ready to Roll* 27%, and *Shazam* 9%. If you look at the (younger) age groups the programmes are oriented towards, the impact is even more marked: in age 10–19 *RWP* down 52%, *Ready to Roll* 40%, *Shazam* 20%. These figures threatened a lucrative source of advertising revenue, as the video-based shows were reportedly worth $5 million annually in advertising.

The episode raises the question of cultural imperialism. Popular music is a place of struggle for New Zealand culture. While there is an upsurge of New Zealand pop music (Flying Nun records, student radio, and distinctive Kiwi sounds), commercial success largely eludes it. In part, this reflects a lack of radio and television airplay. With our MTV programmes, inclusion is generally difficult *unless* the performer has a video – *and* preferably a video to some extent comparable to those available from overseas. Given that the average cost of making a music video is now $20,000 in Australia, and over $100,000 in the USA, this is hardly a realistic expectation for the great majority of New Zealand performers. Commercial success may also have its negative side for New Zealand pop music, packaging and homogenising it along the lines of its international competitors, and thereby burying its distinctive elements, its 'regional differences, quirkiness, low-tech and subversion'. The trick would seem to be retaining these elements while enabling performers access to the mass market and a fairer return for their labours. An interesting footnote to all this is the possible link between overseas domination of our MTV and the unwillingness to purchase local product – 27% of secondary school students say they simply would not buy records by New Zealand performers.

Visual Style, Censorship, and Textual Analysis

MUSIC VIDEOS are clearly pioneers in video expression, but it is the visuals which override the music. As some 75% of sensory information comes in through the eye, the video-viewer concentrates on the pictures – the music arguably becomes the soundtrack to an essentially visual experience.

As *New Musical Express* writer Deesa Fox puts it:

> The single most brutal question to ask of music video is: what are we looking at? We're looking at a combination of amphetamine and technology, which equals profit. Anatomically speaking, to watch a music video is to be on the receiving end of two types of boosters – aural and visual – lockstepped in an advert. To watch a music video is to be electronically pepped.

For performers, this reinforces the increasing preoccupation with visual style – which frequently dominates over content. The current wave of popular performers – Bros, Kylie Minogue, Prince, Madonna, Michael Jackson – while undoubtedly (?!) talented, have in common the fact that they are all ready and willing to manufacture themselves. Their music becomes part of a whole style offered to consumers, and the video is a crucial part of this process.

Associated with this trend is the emergence of directors of video who, because of the distinctive style of their work, constitute 'auteurs' in the new genre. Several of these directors are Australians. Probably best known is Russell Mulcahy, with his 'lush, sweeping, technically overwhelming works that are literally minimovies', notably in his work with Duran Duran. An emerging figure is Alex Proyas, co-founder of Sydney's independent production house MEC: Meaningful Eye Contact. (A significant choice of name given the nature of the medium.) His evocative video for Crowded House's 'Don't Dream It's Over' helped lift the song to number two in the U.S. charts, and Proyas picked up Australia's Countdown 1987 award for best video.

In their analysis of music videos, academic commentators and researchers have emphasised content analysis, usually concentrating on (1) their reported violent, sexist, and sexual imagery, or (2) their suspected potential to curb young people's capacity for imagination. Cultural historian Leonard Jameson sees music videos as 'meta entertainments' that embody the post-modern condition: 'They abet the transformation of reality into images, and the fragmentation of time into a series of perpetual presents'. Certainly, music videos merge commercial and artistic image production and abolish traditional boundaries between an image and its real life referent. Another critic, Anne Kaplan, suggests that MTV is part of a blatently consumer culture, in which the spectator has become decentred and fragmented, unable to any longer distinguish fiction from reality.

Educational authorities express concern about the implications for their students: the Ontario (Canada) government has recently urged school boards to instruct children on how rock videos and other mass media shape and manipulate their lives. Concerned that rock videos 'legitimise violence' and reinforce sexual and racial stereotypes, the Ontario Teachers' Federation supports the government's plans to make media literacy mandatory in High School English courses. A content analysis of 518 music videos, undertaken by the (US) National Coalition on TV Violence, found some 40% contained at least one instance of violence, and, of these, 39% portrayed the violence as sexually related. A recent treatise on the decline of American youth blames the waywardness of the young on, among other things, rock and roll: 'Rock Music', Bloom writes, 'has one appeal only, a barbaric appeal, to sexual desire – not love, not eros, but sexual desire undeveloped and untutored'.

Such accusations are not new; practically every new medium with mass appeal has engendered a 'moral panic', from the music hall and silent movies to horror comics and television.

That MTV is dangerous finds ready evidence in the open sexuality and violence of many concept videos – videos that interpret or embellish a song. They raise a host of awkward questions and debates about media effects, research and censorship. Music videos are currently not examined by the Film Censor's Office in New Zealand, though this situation may change with the report of a committee reviewing censorship and pornography. The topic of MTV and censorship, though obviously complex and sensitive, is one that lends itself to classroom examination.

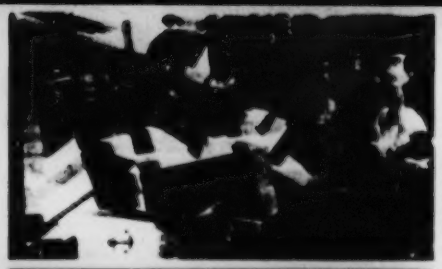
In the best known and most systematic analysis of music video to yet appear, Kaplan constructs five categories for understanding music video. Her typology uses the history of popular music, psychoanalysis and film theory to arrive at five typical video forms: the Romantic, the Socially Conscious, the Nihilist, the Classical, and the Post-modern. Kaplan claims that while 'few videos may actually fit precisely the specific types ... these types offer a scheme to which nearly all the videos can be related'. Her summary of them, gives some indication of their bases.

Kaplan's approach can be criticised for its preoccupation with the music video itself, particularly its visual style, and for her lack of attention to videos' general pop culture context, especially the production context. While the detailed analyses

Five main types of video on MTV

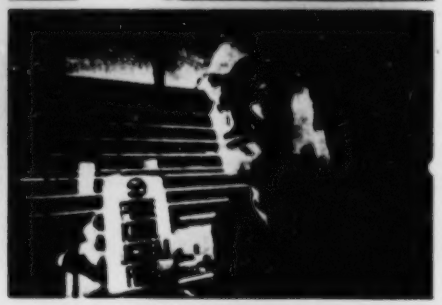
		Modes (all use avant-garde strategies, especially self-reflexivity, play with the image, etc.)				
	Style	Romantic	Socially conscious	Nihilist	Classical	Post-modernist
		Narrative	Elements varied	Performance Anti-narrative	Narrative	Pastiche No linear images
Predominant MTV themes	Love/Sex	Loss and reunion (Pre-Oedipal)	Struggle for autonomy Love as problematic	Sadism/masochism Homoeroticism Androgyny (Phallic)	The male gaze (Voyeuristic fetishistic)	Play with Oedipal positions
	Authority	Parent figures (positive)	Parent and public figures Cultural critique	Nihilism Anarchy Violence	Male as subject Female as object	Neither for nor against authority (ambiguity)

Tina Turner
What You Get Is What You See
In this case Tina Turner is looking at the males – a reversal of the usual gaze of males at females in videos.



Dire Straits
Money for Nothing
Computer graphics used in video. This is very 'state of the art'.

Rolling Stones
Undercover of Night
A girl viewer gazes at Mick Jagger on a television screen (out of shot) singing.



80 In The Shade
Heatwave
Political reference. (In the advertisement version the can reads 'L & P'.)

of videos as individual visual narratives is useful, attention also needs to be paid to what Goodwin terms 'the macro-narratives of star personae and the meaning of the music itself', as well as to 'an understanding of pop's (dispersed) industry and the meanings it generates'.

A simple approach to classroom analysis of music videos is to consider them as a text in themselves, a product whose visual imagery and associated music can be examined in similar fashion to films. Along with such a textual analysis, questions of the type stressed by Goodwin – of their relationship to the broader pop culture – can also be pursued, particularly thorugh the links with style.

Topics/Questions which can be examined include:

1. The *mood* of the video – the way in which the music, the words and the visuals combine to produce a general feeling – of nostalgia, romanticism, nihilism, or whatever.
2. The *narrative structure* – the extent to which the video tells a clear time-sequenced story, or is a non-linear pastiche of images, flashbacks, etc.
3. The *realism*, or otherwise (fantasy), of the settings/environments in the video.
4. The *themes* – the treatment of standardised music video themes such as authority (e.g., depiction of authority figures, relation to young), love/sex, 'growing up' and loss of childhood innocence), social consciousness of varying types (from personal – Michael Jackson's 'The Man in the Mirror', to political – Midnight Oil's 'Beds are Burning'.)
5. The importance of *performance* – central to some music videos, especially hard rock and heavy metal; why does this format 'fit' these styles of music?
6. The *gaze* – who is looking at whom, how, and what do these conventions convey (in terms of power relations, gender stereotypes, etc.)?
7. Different modes of *sexuality* – the female as mother/whore (consider Madonna's 'Like a Virgin'); androgyny and the blurring of dress codes (Boy George); and homoeroticism (heavy metal videos, creating an energetic erotic appeal, often with violent and sadistic elements, and sometimes verging on self-parody, as in Billy Idol's 'Got to Be a Lover').
8. *Camera* techniques, *lighting*, use of *colour*, and *editing* – here it is worth checking a general text on film analysis (I recommend Horrocks and Tremewan, 1986) for detailed guidance. Different styles of video clearly utilise different conventions; heavy metal videos, for example, make considerable use of wide-angle lenses and zoom shots (associated with their frequent concern format), and rapid montage, all combining with the driving music to give an effect of almost relentless action and aggressive physicality (e.g., Motley Crue).
9. *Which viewers* is a particular video aimed at? Do different MTV programmes have different target groups?
10. What are the links between music videos and commercial success, the dominance of the major record companies, and the marginal situation of most local products and artists?

What about the viewers?
A research project

AMONGST ALL THIS, the kids, as Cyndi Lauper puts it, 'just want to have fun'. New empirical studies focus on the attitudes and activities of the audience for music video. With this in mind, a small-scale exploratory study was undertaken in late 1987, with some third form music classes in a provincial high school. The pupils (60 boys and 30 girls, from four classes) completed a written questionnaire and discussed their responses with their music teacher and myself. We also collectively viewed and discussed a number of music videos. The general aim was to gather some basic information about the pupils' music preferences, their consumption of other media, and the social role these played in their lives. A secondary aim was to explore various methodologies which could subsequently be used in a larger scale study, (undertaken in 1988).

The six videos examined had all been screened in late 1987 on the highly popular *Ready to Roll*. Their analysis illustrates some of the approaches sketched above, and some of the difficulties involved with them. Questions examined included the factors which led pupils to consider certain videos to be 'better' than others; the attention they paid to political references in the videos; their awareness of sexism/sexuality in the videos; and the importance of the video to the performer's commercial success. The type of advertisements used with *Ready to Roll*, and the similarity between the rock videos and some of the advertisements were also discussed.

The varying popularity of the videos mainly reflected pupils' awareness of fast editing linked to the images, creating and sustaining attention, and a limited knowledge of camera techniques (close up, long shots, fades, super-imposition of images in the one frame, etc.). On the whole, however, the pupils' very limited visual literacy skills obstructed any in-depth analysis. They had a marked preference for videos

which told a story of sorts, or at least included elements of dance and were in settings other than the performers simply singing/playing. Partly reflecting this, the most popular videos screened were 'Wipe Out' by the Fat Boys, a beach party oriented video with strong comic elements; and 'Beds Are Burning' by Midnight Oil, with its images of Australian desert and urban settings, along with both traditional and contemporary aboriginal elements.

Despite the fact that in theory visual stimuli take clear precedence over aural stimuli, pupils' argued that *the song itself* was the basis for their preference. In the case of a generally unpopular video, Bananarama's 'I Heard a Rumour', while pupils agreed that the visual aspects of the video were impressive, they saw these as insufficient to 'carry' a weak song. Similar comments were made regarding Cliff Richard's 'Some People'; this was a sophisticated video, featuring stylised cameos referring to films (Annie Hall, Cabaret, etc.). An additional point made here, was that music videos were frequently aimed at particular segments of the (largely) youthful target audience, and the two examples (above) were arguably oriented towards older people.

The pupils were aware of the importance of a 'good' video to commercial success, although they had not generally recognized the limitations this imposed on Kiwi music. Many were surprised to know the average costs of music video production. As several observed, a video would frequently receive initial airplay on *Heartbeat City* and subsequently make *Top 20* and *Ready to Roll*, a process which raised the question of how programmers chose the video clips for particular shows.

While many pupils noted the political references in videos like 80 in the Shade's 'Heatwave' (with cans labelled 'Pure Kiwi, Nuclear Free'), few thought adolescents gave much attention to such views when expressed through the medium. A partial exception was the Aboriginal land rights theme in Midnight Oil's ' Beds are Burning'; this 'made you think about' the topic, though only two students linked this with Maori land claims in New Zealand. Similarly, pupils had a very restricted awareness of the sexism of many videos; for example, few saw the sexism of the bikini'd women and associated close up shots in 'Wipe Out', aside from a few comments along the lines of 'make your mouth water' (boy) to 'they are there to give sex appeal' (girl).

There was more awareness of the close similarities between the style of music videos and much television advertising. It was recognised that at times the distinction between the two is almost totally collapsed, as with 80 in the Shade's 'Heatwave' and the L & P ad. The use of music to create an identification with products (as with 'I Heard it on the Grapevine' in the Levi Jeans ad.), was also noted, as was the targeting of particular products and ads to the youthful consumer group which *Ready to Roll* viewers constitute.

Conclusion

MUSIC VIDEOS are a complex and fascinating part of contemporary culture. While many adults may dismiss them as mindless teenage fodder, or criticise their negative role models and themes, it is clear that rock videos form an important part of young people's culture. (And, of course, many older consumers of rock music also want their MTV!) This article has suggested that MTV can be examined from a number of perspectives and both teachers and students can learn much from the process of analysis. Basically the analysis will fall into two related categories – the video as a text in itself; and the video as a product of a culture, the culture in whose context it resides. The former raises issues of textual analysis, the latter questions of economics, culture and politics. I wish you and your students interesting viewing.

Notes:

Dr Roy Shuker is a Senior Lecturer in the Education Department, Massey University, Palmerston North, New Zealand.

For further reading on the analysis of MTV the following are recommended:

Kaplan, E. Anne (1987) *Rocking Around the Clock. Music Television, Postmodernism, and Consumer Culture*. Methuen: New York.

Shore, Michael (1985) *The Rolling Stone Book of Rock Video*. London: Sidgwick and Jackson.

Frith, Simon (1988) *Music for Pleasure*. Oxford: Polity Press.

The figures on 'MTV' come from
Kaplan, E. Anne (1987) *Rocking Around the Clock. Music Television, Postmodernism, and Consumer Culture*. Methuen: New York.

The dispute between TVNZ and the record industry is described well in
Campbell, Gordon (1986) 'No Show'. In *NZ Listener*, May 31, pp. 22–3.

A similar controversy occurred in Australia during 1987.

Deesa Fox's quotation can be found in
Fox, Deesa (1985) 'The Video Virus'. In *New Musical Express*, 4th May, pp. 26–28.

For further discussion of the necessity of the video clip to the 'manufacturing' of performers see
Hill, Dave (1986) *Designer Boys, Material Girls: Manufacturing the 80s Pop Dream*. Dorset: Blandford Press.

and
Rimmer, Dave (1985) *Like Punk Never Happened*, Culture Club and New Pop. London: Faber.

On Russell Mulcahy's work, see Shore, *The Rolling Stone Book of Rock Video*; and for a profile of Alex Proyas, *Times on Sunday*, (Sydney), 23 August 1987, p.26.

Academic commentators on violence, sexist and sexual imagery are
Sherman, B. and Dominick, J.C. (1986) 'Violence and Sex in Music Videos: TV and Rock 'n' Roll'. In Journal of Communication, Vol. 36, pp. 79ff.

Leonard Jameson is quoted in Campbell, above.

Critic Anne Kaplan is also found in the reference to her, above.

The Ontario Teachers' Federation views are quoted in the *Toronto Star*, February 20, 1987.

The figures collected by the (US) National Coalition on TV Violence are found in Sherman and Dominick, above.

The Quotation from Bloom is in
Bloom, Allan (1987) *The Closing of the American Mind*. New York: Simon and Shuster.

On an earlier moral panic over mass media in New Zealand, see
Shuker, Roy and Openshaw, Roger (1987) 'New Zealand Youth and Silent Movies', *New Zealand Journal of Educational Studies*, Vol. 22, No.1, pp. 87–99.

An overview of the subsequent 1988 study of New Zealand adolescents' consumption of popular music, etc., appears in
Shuker, Roy *et al.* (1988) 'Adolescents and Popular Music'. Paper to NZARE Conference, Massey University (available from the author).

The debate and awkward questions about media effects, research and censorship are discussed in
Shuker, Roy (1986) 'Video Nasties: censorship and the politics of popular culture', *New Zealand Sociology*, Vol. 1, No.1, pp. 64–73.

Goodwin can be found in
Goodwin, Andrew (1987) 'Music Video in the (Post) Modern World', *Screen*, Vol. 8, No.3, pp. 36–55.

New empirical studies can be found in
Sun, S. and Lull, J. (1986) 'The Adolescent Audience for Music Videos and Why They Watch', *Journal of Communication*, Vol. 36, pp. 115–125.

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set research information for teachers
number one 1989

YOUNG SMOKERS:
Rebellion, Conformity and Imitation

By Velma McClellan
NZ Department of Health

Sally McAra

'THE more socially unacceptable smoking becomes in adult society the more attractive it appears to the younger generation'. This was the comment of a South Auckland intermediate school principal whose school I visited during a nation-wide Health Department survey of Form One (Year 6) students' smoking. On the affluent northern shores of metropolitan Auckland, I again became aware of an air of pessimistic despondency. 'Girls today know more than we knew about the ill-effects of smoking yet they are taking it up in greater numbers than ever before', said the principal of a large single-sex girls' school.

Generally speaking, principals and teachers were optimistic about the benefits of school-based smoking intervention programmes, but while the pessimists were in the minority, their viewpoints did nevertheless contain an element of truth.

The 1976 and 1981 Censuses, plus various overseas smoking prevalence surveys, indicated that while the incidence of smoking among adults aged 30 and above has steadily declined, smoking among younger age groups has increased. However close analysis of the statistics reveals that smoking has become associated mainly with those groups which tend to occupy subordinate positions in society – women, the unemployed, ethnic minority groups, blue collar workers and juveniles. In contrast, the well-heeled, well-educated, middle-aged, professional male has proved to be the most successful quitter of the smoking habit.

Until this survey, little was known about the actual smoking behaviour of 11- and 12-year-olds, although research among college-aged adolescent smokers had shown many began smoking in their middle primary school years. The decision to undertake a national survey of this kind was to provide the Departments of Health and Education with some facts to work on.

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Eleven-year-old smokers

During 1986 2252 Form One (Year 6) pupils were surveyed, and it was found that 40 percent had already experimented with smoking. Thirty percent of those currently smoking could be said to be regular smokers, although the majority smoked less than once a week. Not surprisingly, the smokers were the most likely to see themselves continuing with the smoking habit. Thirty percent of all the students surveyed said they were uncertain about their future smoking behaviour.

Small towns

Informal discussions with children in the classroom revealed that some started smoking 'because they are unhappy', 'they have problems', or 'they are bored'. Principals and teachers tended to agree, particularly in small town schools where it was felt that not enough was offered in the way of interesting organised after-school recreational activities. Most people would assume that city children would be the most likely to smoke. However, this study showed that the greatest concentration of young smokers was in small towns – 16 percent compared with 8 percent of children from the larger urban centres. Children from rural areas were least likely to smoke.

Some principals and teachers felt that high small town unemployment was a major contributing factor in the higher incidence of smoking among school children. I was told it is a common sight on Friday nights in small town centres to see large numbers of primary and secondary-aged school children smoking in the company of the young unemployed, many of whom are their brothers and sisters. In a small town, smoking is seen as a symptom of youths' frustration and alienation.

Solidarity

Just as there were differences between smoking rates depending on where young smokers lived, there were also clear differences between the three major ethnic groups. Sixteen percent of Maori students were current smokers compared with 9 percent of Pacific Islanders and 8 percent of Pakeha children. Seventy percent of Maori children lived with adult smokers compared with 59 percent of Pacific Island and 40 percent of Pakeha children. In the classroom Maori students freely acknowledge that 'lots of Maori kids smoke'. I was left with the strong impression that smoking among Maori children was an act of solidarity, and a symbol of their social differentiation.

Parent Smokers

The association between the smoking patterns of parents and their children is a common research finding and not confined to the Maori population. This survey found that 72 percent of 11- and 12-year-old smokers lived in households where adults smoked, compared with 42 percent of students who had never smoked. These statistics suggested that if parents smoked then it was highly probable that their children would follow suit. On the other hand, parents who did not smoke tended to produce non-smoking offspring.

In the classroom students agreed that 'kids smoke because their parents do'. And, as one youngster suggested – 'it's easy to nick Mum and Dad's cigarettes because they leave them lying around the house.'

Peer Pressure

The survey found a strong relationship between students' smoking and that of their peers. Eighty percent of the children who smoked also had 'best friends' who were smokers, compared with only 13 percent of those who did not smoke. Friends were also the most common source of cigarette supply.

College students and teenage siblings act as potent day-to-day models of maturity for 11- and 12-year-olds. In Hamilton an intermediate school principal commented that children attending intermediate school are probably for the first time in their lives aware of an age hierarchy. In the eyes of the form one students, the form twos are the 'big guys', while college students are the 'grownups'. Students were quick to inform me that 'most college kids smoke'.

Slimming

Many of the youngsters surveyed were under the false impression that cigarettes had an innate slimming property. Others, however, knew from having observed adults trying to give up smoking that substituting smoking with eating caused weight gain. I suspected that many young girls may be substituting smoking for eating, a behaviour pattern reminiscent of the medical condition anorexia nervosa, which commonly affects teenage girls. The smoking-slimming myth needs to be revealed as such, because the teenage girl is particularly vulnerable to this deception.

Lung Cancer

Most of the students surveyed were aware of the smoking-lung cancer link. However, I suspected this knowledge was of little relevance to the majority of young people, who are largely concerned with the 'here and now'. Lung cancer, emphysema, heart disease and other chronic smoking-related diseases were seen to be problems of old age. Besides, they said they all knew 'really old people' who had 'smoked all their lives' and 'they don't have cancer'.

Benefits

Health programmes aimed at stopping smoking should concentrate on the benefits of not smoking – better breathing, better physical fitness, sweeter breath, more money in your pocket, and healthier skin. Health promoters, parents, teachers, physical education and sports educators all have a role to play in persuading young people not to smoke. We need to provide young people with positive adult non-smoking models. By doing so we benefit both ourselves and the coming generation.

Notes:

Velma McClellan is a contract Social Science researcher for the New Zealand Department of Health.

The paper from which this report comes is *A National Survey of the Smoking Habits of Form One Students in New Zealand Schools*, Occasional Paper 30, available from the Health Services Research and Development Unit, Dept of Health, P.O. Box 5013, Wellington at a cost of $8.80.

The Report was first published in *Health*, Vol. 40, No. 1, published by the New Zealand Department of Health.

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set research information for teachers
number one 1989

Children's Use of the Resources Families Provide

By **Gay Ochiltree** and **Paul Amato**

Institute of Family Studies, Melbourne

IT IS IN THE FAMILY that children learn the skills and knowledge necessary to get along. Most children in fact become pretty competent in both their own family group and in larger social groups such as school. However, some families manage to help their children to be competent better than others. Perhaps there are ways to assist.

Of course there are some things that are unalterable, such as the general level of health of family members, the family's cultural background, and quite often family income depends on the country's economy. In a large study of all the things that affect how well children manage we came across important family factors that can be changed.

Researchers have frequently been more concerned with what adults say is good for children; we made the child's viewpoint our major focus. In articles available from the Institute of Family Studies there are examinations of the effect of family type and family conflict on children's competence. How do family resources help or hinder?

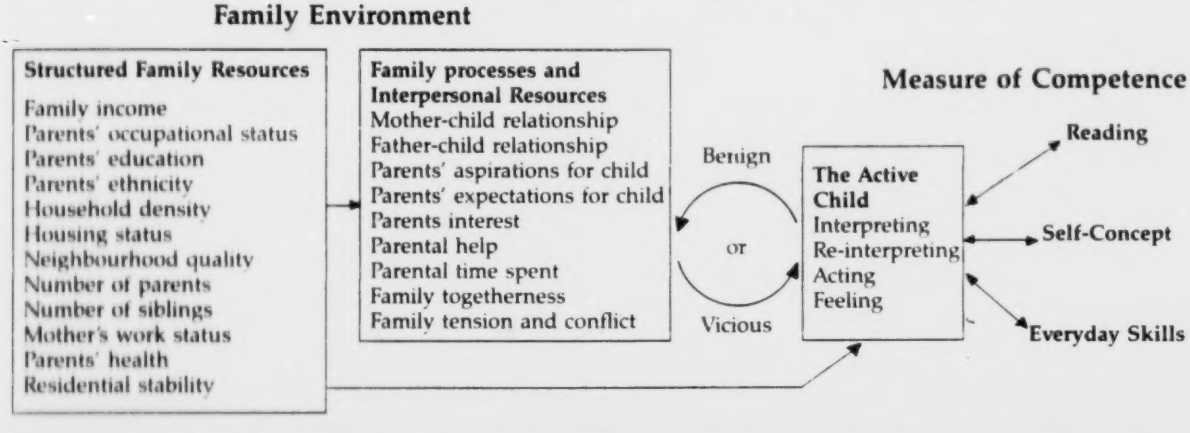
Active Agents

Children are active agents in family processes: they are not passive and merely moulded by the family. From infancy they find they can have an effect on the environment, including family members. Feelings of satisfaction lead to an intrinsic motivation for competence, and so in satisfactory circumstances, the child becomes more and more competent. Brewster Smith, who has written about the development of competence, calls this a benign circle of socalisation. However, where the environment is not responsive to the child's efforts, a sense of competence may not develop and we have a vicious circle of socialisation.

To give an overall picture of why children differ considerably, both in the competence they are equipped with and in their self-image of their own competence, we can draw on the concept of resources for competence. (See Figure 1.) On the left hand side are two lists of resources which are part of the family environment. On the far left are the more objective 'given' and relatively unalterable resources; the items at the top are linked to society, the bottom ones are just part of each family. All of the resources in this list are largely beyond the direct control of the child; they are the Structural Family Resources to which the child must adapt. They have a direct effect, but much of their impact is mediated by family processes – the arrows on the figure show this – into indirect effects.

In the second list are the more dynamic and intangible family resources. These include such things as the relationships between children and parents and the presence or absence of conflict in the family. These resources are changeable and can be influenced by the child. It is thought that these **Family Processes and Interpersonal Resources** directly affect the child's competence. This reciprocal relationship between the child and the family environment is indicated on the model by a circle. However, the true relationship is more like a spiral of increasing or decreasing competence.

Figure 1. Resources for competence



In our study we used three measures which tap rather different aspects of competence: **reading** – as reading is a highly valued skill on which formal education is based; **self-esteem** – to tap the child's feelings about self; **everyday skills** – using a check-list of 20 skills needed for taking care of personal needs in everyday life. The arrows to and from these measures in the figures reflect the effect of intrinsic motivation; the children's level of competence depends on both how they interpret what others do and think, and how they see their own behaviour.

Some analysis of the data showed that both **Structured Family Resources** and **Family Processes and Interpersonal Resources** were related to children's reading ability: high levels in both pointed to high reading competence. Children's self-esteem appeared to be more strongly related only to **Family Processes and Interpersonal Resources.**

However, the child is an active user of resources, so it was decided to attempt to discover **how** family processes help a child translate resources into competence. We decided to concentrate on children from families which were either very high or very low in income, status, education, housing, and so on – the relatively untouchable social facts. Also we concentrated on children who were either very high or very low in general competence.

Where *structured* resources are low, one might expect to find children who are low in competence. Likewise, where structured resources are high, highly competent children might be expected to be the norm. Most interesting are those anomalous cases where family resources are low, yet children have achieved a high level of competence, or where children come from families with high resources, yet are below averagely competent.

Findings

1. High competence children generally came from families where relationships were close and warm, while low competence children were more likely to come from families where relationships were distant.

2. Low competence children frequently complained that they did not have enough time with parents or that parents were uninterested in what they did. At secondary level this concern was frequently expressed about fathers who were seen as 'workaholics'.

3. The parents of high competence children, in almost all cases, held high educational and occupational aspirations for their children, while the opposite was usually true of low competence children.

High Resources

An example of a typical family from the high resource but low competence group illustrates these trends. Amelia aged 16 lives with her parents and younger siblings. Her father earns a good income from his own business which often requires weekend and evening work. Amelia's mother described her as 'a bit moody, very quick tempered. She lacks confidence, she'll only go if you push her'. Her parents often argued over the children, money, sex, chores, and responsibilities.

Amelia described her mother as 'easy to get along with' but 'she works too hard'. The fights between her parents made her 'feel uptight and [I] try to stop them because they really scream and yell'. Amelia wished her father would spend more time with her, but said he is 'always busy with his work'. Her description of her father revealed some ambivalence: 'He gets mad easy – easy to get along with if you don't get on the wrong side of him'.

Low Resources

1. Low competence children generally came from families marked by multiple problems and sources of stress. The chaotic, and demanding nature of family life appeared to leave many of these parents 'drained' of time and energy. As a result, parent-child relationships tended to be distant and unrewarding.

2. High competence children, although coming from families which frequently faced problems, often economic, were nevertheless able to maintain a supportive, close relationship with at least one parent. Their parents helped them with problems and school work.

3. A strong trend was apparent: the parents of high competence children had high aspirations and expectations for their children.

A typical family which illustrates the low resource high competence group was that of Jane, aged 16. Jane's family is still adjusting to the separation of her parents a year ago. The mother and children get along well. Until the separation Jane liked her father best but now had more understanding and affection for her mother. She said, 'I can talk over anything with her, except I don't like to talk about Dad to

her . . . I talk about everything else with Mum'. Jane felt that both of her parents were interested in her, and she was satisfied with the amount of time her mother spends with her. Although Jane expressed a great deal of pain and sorrow at the separation of her parents, she appeared to be coping well.

Although Jane's family, and others like it, were relatively impoverished in material terms they were still able to provide home environments involving warmth, encouragement, and general support. Children in these families, although disadvantaged in certain ways, were able to draw upon these family resources when they were needed, and appeared to be well on the way to becoming competent adults. However, since they lacked economic resources it is likely that the advent of some major problem (health, accident, unemployment) could throw these families into disequilibrium.

What Can Be Done To Help?

Increased economic support is necessary for all low resource families. This would provide both the basic necessities and some necessary extras such as books and outings which help develop child potential. It would also remove the stress associated with economic uncertainty and in multiple problem families might allow the rechannelling of time and energy into the building up of social and emotional relationships.

However, economic and material support alone is not sufficient to facilitate the development of child competence in families where interpersonal relationships are unsatisfactory. This was clearest in the high resource families, such as Amelia's, where the children were low in competence. These families, despite their general level of affluence, were often marked by a pattern of distance and lack of warmth. For many families rich or poor, the provision of increased support and education for better family relationships could be useful. Where and how can such help be given? Preventative education, such as human relations education in schools, and later on, preparation for marriage, is one answer, especially in the long term. However, in the short term, some form of counselling or family therapy is necessary if families seek help.

The large number of high resource but low competence children who regretted the lack of interest and attention shown by their fathers (usually due to long working hours) highlights the importance of the role of the father! Highly competent children from one-parent homes rarely expressed this regret, and usually felt that their fathers were interested in them even though they did not live in the household. Thus, the crucial factor seems to be the interest and attention of the father, rather than his location.

Staggered or flexible working hours, the availability of permanent part-time work for mothers and fathers, (with eligibility to return to full-time work), in both the public and private sector, could assist in parental responsibilities being more equitably shared. At present there are some moves in this direction in Australia. The current provisions for equal opportunity may lead to a lessening of sex-role stereotyping. By encouraging men to work in early childhood education, which is still largely the province of women, the fathers of tomorrow can have a greater variety of models of male behaviour.

Finally, there are implications for education.

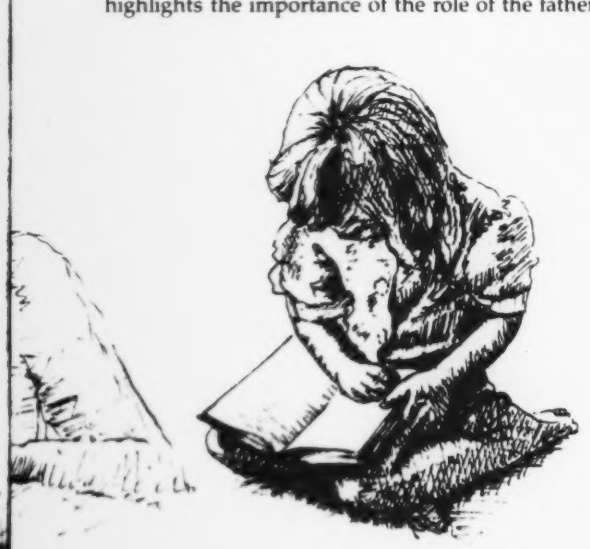
1. Children from low resource families can be helped directly through the provision of more pre-school and child care facilities. In Australia such facilities are not equally available to all children and continue to be inadequately funded.

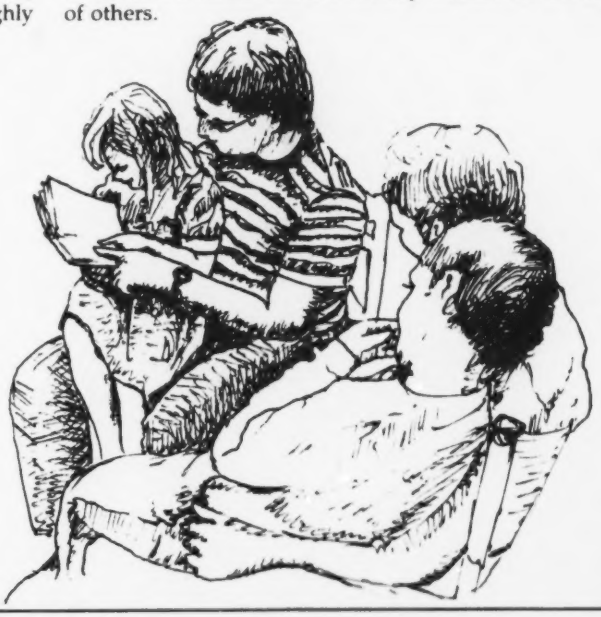
2. Programs where teachers work together with parents, especially where the parents are from all socio-economic circumstances, are more likely to be effective in enhancing child competence than those which exclude parents; an example of this is the British Harringey Project in which parents learned to assist their children with reading and writing.

3. Teachers must avoid stereotyping children on the basis of family type. In our study we found many of the most competent children came from one-parent families.

What Competencies?

Which competencies do we want to develop in our children? At present the national emphasis is on achievement and competition. Should we, or could we, emphasise interpersonal skills, concern for others and social responsibility? If there is to be more money and effort put into developing competence in children, what does the community get back for its investment? Explicit in the notion of greater community support for children there should be a clear expectation of reciprocity. Children should not only be capable of caring for their own needs but also develop concern for the needs of others.





Jill Parry

Notes

Dr Gay Ochiltree is a Fellow of the Institute of Family Studies, 300 Queen St, Melbourne, Victoria 3000, Australia. Dr Paul Amato was a Research Fellow at the Institute at the time of the project described here.

Interviews were completed with 195 primary school children in Years 3 or 4 and aged 8 or 9, and 207 secondary school students aged 15 or 16 in Years 10 or 11 at secondary school. The children were randomly selected by family type from a representative sample of State, Independent and Catholic schools throughout the state of Victoria. Approximately half the children had experienced the separation and divorce of their parents, and a small number the death of a parent. Seventy-three children in this group lived in stepfamilies. A parent, usually the mother, was interviewed in each family, and the child was interviewed on tape and the interview transcribed. The child was also tested using the Everyday Skills Scale, a Cloze reading test and a Piers Harris measure of self concept.

Acknowledgement

This work is part of the study Children in Families conducted by the Australian Institute of Family Studies. The study was designed by Gay Ochiltree and Don Edgar (Director); Paul Amato joined the study after the field work was completed.

Further Reading

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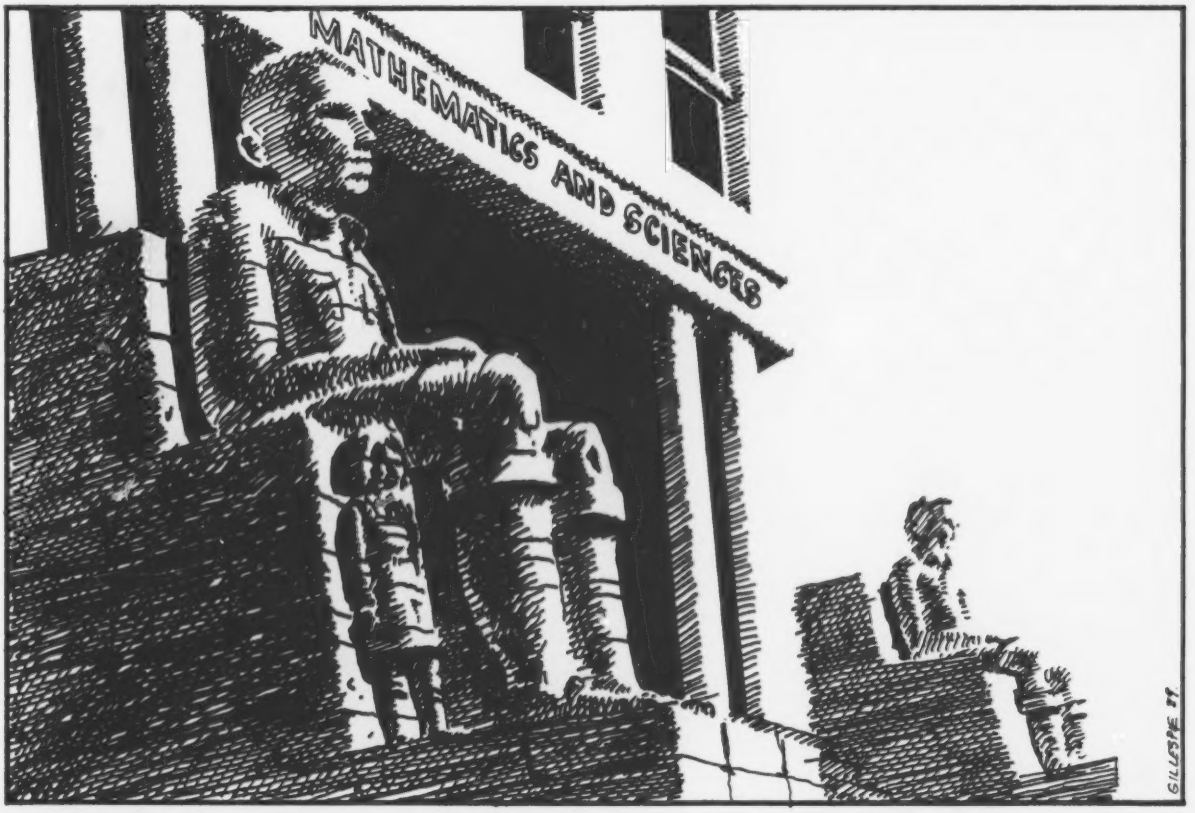
'Engineers Don't Carry Handbags'?!

By Elizabeth Orr
NZCER



'What did I tell you?' said the kindergarten teacher after the visit.
'Boys can be nurses. Girls can be doctors.'
'No they can't,' came the answer.
'What do you mean?' The teacher was stunned. 'You talked with a man who is a nurse and a woman who is a doctor.'
'Yes,' chorused the children triumphantly, 'but they lied.'

This story about sex-stereotyping was used by two American researchers to illustrate the persistence in United States' schools of traditional ideas on sex roles. But it could have come from a New Zealand kindergarten. Or an Australian one. In all three countries educational institutions have been slow to recognise the special problems faced by girls and even slower to deal with them.

Getting the situation straight

IN 1987 THE NEW ZEALAND Council for Educational Research undertook a review of the past twenty years' research into equal educational opportunity for New Zealand girls and women and discovered that not much progress had been achieved. It seems attitudes towards sex roles have not changed greatly in our schools since the period early this century when groups like the Plunket Society succeeded in promoting Domestic Science at the expense of Mathematics and the sciences. The most important findings of the research were the limited aspirations and life chances of most New Zealand women at the end of their secondary schooling and the relatively low numbers going on to tertiary education.

There have been some changes, thanks to a few initiatives by the Education Department and the commitment of individual teachers and counsellors, but they have affected only a minority. These have been mainly the girls who have attended university and then entered one of the high-earning 'male' professions. In 1988 27,000 women and 29,000 men were enrolled as internal students at a New Zealand university and the percentages of women in law and medicine were substantial. We also know from a NZ University Students' Association 1987 Income and Expenditure Survey that most women who study at university come from middle class families. A totally different picture of girls' participation in post-school training emerges when one examines apprenticeship figures. In March 1988 in New Zealand 26,000 men were undertaking this form of further education but only 2,000 women.

Most New Zealand girls still do not take sufficient Mathematics *and* sciences (or technical subjects) to enter careers other than low-paying 'female' occupations such as clerical or shop work or nursing. In 1985 only 28% of sixth form girls took Chemistry and only 17% of them took Physics. Maori girls are particularly disadvantaged. More than half of this group leave school with no formal academic qualifications; the figure for non-Maori girls is 25%.

Where girls do have the requisite qualifications low self esteem and aspirations may deter them from entering non-traditional trades or careers in technology or commerce. This is why we now recognise the problem as a sex-stereotyping one: removing the attitudinal barriers which prevent girls from fully utilising their abilities. On average girls do well in strictly academic terms. They do as well as boys, if not slightly better. But neither they nor society reaps the benefits of their achievement. Recent studies suggest this problem may be particularly marked in co-educational schools. These schools, created after the Second World War partly to give girls a more balanced education, have allowed male and female stereotypes to be reinforced.

Much the same pattern is evident in Australia. This is despite the efforts of official agencies such as the Commonwealth Schools Commission. Through its reports and initiatives like PEP (the Participation and Equity Programme) the Commission appears to have been much more active than the N.Z. Department of Education in promoting sex equity.

Will Official Policies on Sex Equity in Education change the situation?

Both the New Zealand and Australian governments are encouraging girls as well as boys to stay longer at school and to go on to tertiary education. There have been calls on each side of the Tasman for a national policy on the education of girls and women. Official reports refer frequently to sex equity in education and the economic case for girls to enter a wider range of occupations. But still not much happens. Is there another strategy which might be more effective in promoting change?

Although a national policy on equal opportunity for girls should provide an invaluable framework for local efforts, in the end sex equity will have to be achieved in individual educational institutions: in the classroom and the boardroom. Teachers, principals and school boards, will all need to change their behaviour. The work of two American researchers makes a strong case for all these groups to work for change because it shows that achieving sex equity is in the interests of *all* students.

The Classroom: Improving Interactions

In 1984–5 Myra and David Sadker undertook a classroom interaction study funded by the American National Institute of Education. It covered teacher/student interactions in more than 100 classrooms in four states and the District of Columbia.

The trained observers found evidence for substantial sex bias. What was happening was that 50% of the teachers were giving their lessons to co-educational classes as if they were sex-segregated. Teachers questioned boys more than girls, criticised them more frequently and offered them more encouragement. Boys were the central figures in the classroom, with girls in very much a second class position.

There is New Zealand and Australian research (see *Notes* section) which has revealed the same kind of sex-biased interactions in Australasian classrooms. The special value of the Sadker study is its discovery, through a follow-up Teacher Training project, that as teachers become more equitable they also become more effective generally.

In the second part of the Sadker study forty teachers were trained in sex-equity skills and evaluated over a six month period. They practised responding in an unbiased way to student comments and behaviour, asking girls questions as often as boys, and generally running their classroom so as to eliminate sex segregation.

The trained group had more intellectual interactions than non-trained teachers. Their teaching talk went up and their 'control' talk went down. The *quality* of their interactions also improved: they gave their students more precise feedback – praise and constructive criticism in place of mere acceptance interactions such as uh-uh or OK. The Sadkers discovered, which they had not expected, that sex-equity oriented teacher training helps teachers work more effectively with *all* students.

Sex Equity and Tertiary Institutions

Following their study of teacher/student interaction in schools the Sadkers undertook a similar project on behalf of the Fund for the Improvement of Post-Secondary Education. Again trained observers investigated teacher behaviour, this time in a wide variety of college classes ranging from Anthropology to Communications to Business. They found that college instructors interacted more frequently with male than with female students in all subjects.

In commenting on this finding the Sadkers noted that in many ways American colleges and universities have done far less than the schools to promote sex equity. Is this true of the New Zealand/Australian scene? Technical institutes and universities have made some special efforts in New Zealand to encourage women to enter non-traditional areas. However the limited research suggests that these institutions have by and large accepted, rather than actively promoted, the increased participation by women. For example, it was several years after the Department of Education carried out its study of women teachers in the schools that Margaret Wilson examined the position of academic women. Her study was prompted by university teachers, too, not the universities themselves. Except for Waikato University, the universities have acted to promote equal employment opportunity only since Wilson's report or, in some cases, when the law required them to do so in 1987.

Appointing more women to university faculties and promoting them to senior positions should raise the aspirations of female students, and so contribute to sex equity. In addition the Sadkers' findings suggest that there is considerable scope for improving the way university teachers (and other tertiary teachers) respond to women, and so to their students generally.

Special Sex Equity Programmes and Educational Excellence

The Sadkers also point out that there is a link between sex equity and improving general educational practices in a variety of special programmes introduced to assist girls, or older women. Among them were programmes aimed at stimulating girls' interest in mathematics. These proved to be of value to many boys as well as to girls.

Special Mathematics programmes for girls in secondary schools could lead to a general rise in teaching standards. Clark and Vere-Jones have pointed out how few New Zea-

land teacher trainees major in Mathematics. The resulting shortage of teachers with a deeper understanding of the subject must be jeopardising the first years of Mathematics teaching in the primary schools. Some 80% of teacher trainees in recent years have been women, so any widespread effort to convince girls that they can enjoy Mathematics could make a significant contribution to the general standard of Mathematics teaching in primary schools. We need to break a cycle of low interest among women in Mathematics.

Mathematics is not the only cause for concern. Even lower numbers of teacher trainees select Science as their special topic. Special efforts to interest more girls in the sciences at secondary level should also have positive effects on teaching standards in the primary schools.

Sex-Stereotyping: a Two-Edged Sword

Most of the victims of sex-stereotyping are women, and most of those who complain about it are, not surprisingly, women. As a result we tend to forget that stereotyping in the education system disadvantages those boys who do not fit the male sex-role stereotypes: the quieter boys with intellectual or artistic rather than athletic interests. It can also lead to the unfair treatment of boys who come into conflict with school authorities because they exhibit the independence and aggressive behaviour encouraged by the male sex-role stereotype. American research has found that boys are punished more often and more severely than girls for identical behaviour.

Unfortunately, although New Zealand writers such as Middleton have pointed out that programmes to eliminate sex bias in the schools would benefit boys as well as girls no major experiment of this kind has been done in New Zealand.

Achieving Excellence Through Administration: Women as Principals

The Sadkers discuss sex equity and educational administration introducing us to a number of American research studies involving comparisons between female and male principals. It becomes clear that school boards which overlook good women candidates for principalships are denying their schools some of the most talented potential leaders.

The American studies comparing female and male principals identified either no difference of behaviour or better performance by women. For example, 'schools with women principals have fewer discipline problems, higher faculty and student morale, and higher student achievement.' Female principals are 'more democratic and effective in working with faculty and community representatives.' Women principals have other desirable professional qualities such as a willingness to apply new ideas and methods and constructive approaches to conflict solving. They are more interested in monitoring student progress and more knowledgeable about curriculum than are male principals.

The research on women in educational administration carried out in New Zealand and in Australia has not on the whole involved comparisons of this kind. It has instead explored why there are so few women in senior positions in the schools. Probably this emphasis, which was proposed by women themselves, was an inevitable result of the decline in the number of women in educational administration which followed the changes in regulations made in both countries in the name of sex equity. Unfortunately these changes, which were supposed to remove sex bias from all appointments, led to a greater, rather than a lesser, sex imbalance in top positions.

In Australia a NSW study made in 1979 predicted that by 1990 there would be no women principals in Australian secondary schools. In New Zealand, largely as the result of the Teacher Careers and Promotion Study (TEACAPS) undertaken by the Department of Education there has been an increase since 1983 in the number of women in senior positions but it is a very slight increase. There can be no assumption that it will continue under the new administrative system when all appointments and promotions will be determined by local school trustees. Despite the studies already quoted which prove the excellence of women principals, study after study also shows that American school boards continue to appoint a male candidate over an equally qualified female candidate.

It is therefore not surprising that the New Zealand Picot report, though entitled *Administering for Excellence*, makes no reference to this particular means of achieving effective administration and good school/community relations. Its recommendation for including equal employment opportunities programmes in school charters reads like an afterthought.

On the other hand Picot does expect school board trustees to brief themselves more thoroughly than in the past on educational issues, and equal employment opportunity is one of those issues. It is to be hoped that trustees will learn about the research on women's talents as administrators, and decide that it is in the interest of their school to cultivate those talents and then to make use of them in senior positions.

Similarly in some Australian states – South Australia and Western Australia being two examples – moves towards making some teaching appointments on merit rather than seniority mean that women could be appointed to senior positions in greater numbers if they are seen as meritorious. Shirley Sampson's national study of the experiences of Australian female and male teachers suggests why they will not be seen as such. But read together, Sampson's findings and those described by the Sadkers, provide good evidence why Australian school boards too should think seriously about appointing women to top positions.

What you might like to do after reading this article

1. Check whether your nearest College of Education offers training on how to apply the principle of sex equity in the classroom:
   a. in its initial teacher training courses
   b. as part of its in-service training courses?

If the College offers suitable in-service courses suggest that staff at your school make use of them.
If it doesn't, then work with other teachers to have such training introduced.

2. Support special programmes for girls in Mathematics and the physical sciences at your school.

3. Ask whether your nearest university will send a team of staff to talk to fourth formers about university study.

4. Draw the attention of your school board to the research findings on women as school principals.

5. Ask to have sex equity included in the goals of your school charter.

Notes

Elizabeth Orr is a Wellington consultant on Equal Employment Opportunity and author of the 'Equal Opportunity for Girls and Women' section of the NZ Royal Commission on Social Policy report, see below.

The title of this item comes from a British account of girls' reactions of disbelief after meeting women in normally male professions.

The story of the kindergarten children who thought they were told lies comes from

Sadker, Myra; Sadker, David and Klein, Susan S. (1986) Abolishing Misconceptions about Sex Equality in Education. *Theory into Practice*, Vol. 25, No. 4.

NZCER's 1987 review of 20 years' research into equal education opportunity for NZ girls and women (which found that not much progress had been achieved) is

Wylie, Cathy, *et. al.* (1988) *How Fair is New Zealand Education?* A report to the Royal Commission on Social Policy. Wellington: NZCER.

One of the initiatives by the Education Department in New Zealand was the setting up of the Women's Advisory Committee on Education which published a report

WACE (1988) *A National Policy for the Education of Girls and Women in New Zealand*. Wellington: Department of Education.

That girls do better at school is detailed in the WACE Report, page 10.

> Up to sixth form level, more girls than boys gain formal qualifications. Of Students leaving school in 1986, 30 percent of females and 25 percent of males were awarded Sixth Form Certificate. However, more boys than girls were awarded Higher School Certificate, University Bursary and University Scholarships (Department of Education statistics 1987, Table 43).
>
> The problem is not that girls are not achieving at school. They are achieving well but only up to a certain level, and only in a limited range of subjects (Kate Burch, *Strategies for Change*, Department of Education, 1988).

The Classroom: Improving Interactions. The research for the American National Institute of Education which shows achieving sex equality is in the interests of all students is found in

Sadker, Sadker and Klein, 'Abolishing Misconceptions about Sex Equality in Education', mentioned above.

Australian research revealing sex-biased interactions in the classroom was done for the Australian Schools Commission 'Projects of National Significance Scheme' and can be found in

Evans, Terry D. (1987) Gender on Primary Schooling in Australia, *Journal of Curriculum Studies*, Vol. 19, No. 2.

New Zealand research revealing sex-biased instruction can be found in

Neale, Jenny (1987) *A Study of Sex Differences in Pupil/Teacher Interactions*, unpublished MA Thesis, Wellington: Victoria University.

The NZ Department of Education's study of women teachers is

Department of Education (1982) *The Teacher Career and Promotion Study* (TEACAPS), Wellington: Department of Education.

The position of New Zealand academic women is detailed in

Wilson, Margaret (1986) *Report on the Status of Academic Women in New Zealand*, Wellington: Association of University Teachers of New Zealand Inc.

The examination of women's participation in Science education in New Zealand is

Clark, M. and Vere-Jones, D. (1987) *Science Education in New Zealand: Present Facts and Future Problems*, Wellington: Victoria University Institute of Statistics and Operations Research.

American research that has found boys are punished more often and severely than girls can be found in

Etaugh, C. and Harlow, H. (1975) Behaviours of Male and Female Teachers as Related to Behaviours and Attitudes of Elementary School Children, *The Journal of Genetic Psychology*, No. 27, pp. 163–170.

and

Thompson, D.C. (1985) A New Vision of Masculinity, *Educational Leadership*, Vol. 43, No. 4, pp. 53–56.

Middleton's description of how boys as well as girls would benefit from programmes to eliminate bias can be found in

Middleton, Susan (197?) *A Phenomenological Perspective for the Classroom Teacher and its Application to the Education of Women*, unpublished MA Thesis, Wellington: Victoria University.

The American research comparing male and female principals include the following

Shakeshaft, C. (1985) Strategies for Overcoming the Barriers to Women in Educational Administration. In Klein, S. (ed) *Handbook for Achieving Sex Equality Through Education*, Baltimore, Maryland: The John Hopkins University Press, pp. 124–144.

and

Adkinson, J. (1981) Women in School Administration: A Review of the Research, *Review of Educational Research*, Vol. 51, No. 3, pp. 311–343.

The Australian (NSW) study in 1979 predicting no female principals by 1990 is

Sampson, Shirley N. (1987) Equal Opportunity, alone, is not enough or Why there are More Male Principals in Schools these days, *Australian Journal of Education*, Vol. 31, No. 1.

The 'Picot' report which formed the basis for the NZ Government policy statement *Tomorrow's Schools* is

Picot, B. *et. al.* (1988) *Administering for Excellence*, Wellington: Government Printer.

The policy statement is

Minister of Education (1988) *Tomorrow's Schools*, Wellington: Government Printer.

Shirley Sampson's study of Australian female and male teachers is mentioned above.

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Crossing the DividE

Transition from Primary to Secondary School

By Clive McGee
Hamilton Teachers College

NINE OUT OF TEN CHILDREN change from one school to another as they go from primary to secondary school. There is much discontinuity at the divide for the children, reinforced by the way in which the administration and functions of education have evolved, with separate systems of primary and secondary education, separate funding, separate teacher associations, inspectorates, training, curriculum and conditions of service.

Over a quarter of a century ago, a New Zealand report noted that while some progress had been made in bridging the gap, making the transition easier, much remained to be done. Over a decade later, another report said virtually the same thing, and urged that steps be taken to remove barriers between school levels.

There is evidence from the United Kingdom, Australia and North America that when there are no effective contacts between primary and secondary schools, and they run no orientation programmes, 1. adjustment to secondary school can be much longer than it needs to be; 2. when adjustment is difficult, schoolwork is adversely affected; and 3. lower socio-economic students take longer to adjust than middle class students. And there is a good deal of evidence that the primary–secondary transition is indeed often traumatic.

In New Zealand there have been attempts by some primary and secondary schools to establish effective linkages. However, the main contacts are administrative for collecting and transferring information, with far fewer contacts co-ordinating curriculum and sharing facilities, activities and teaching.

The Research

The following questions were investigated:

1. What are current practices?
2. What factors promote effective linkage?
3. What factors are barriers to effective linkage?

Six case studies were carried out in different parts of New Zealand. A cluster of schools in each case study comprised a state secondary school and its main contributing primary schools. Clusters represented a wide range of school type, geographical distribution, and the type of community, including race, ethnicity and social class. The schools were chosen because they had already attempted to establish effective primary-secondary linkages. Some information about pupils' reactions to transition was gained from discussions with groups of pupils and from written responses. However, what teachers *do* was the main focus of the study.

A Case Study

Here is a brief description of how, in one community, steps have been taken to improve practices. The secondary school of 500 pupils is located in a small town in a farming district. Contributing are twelve state primary schools, one in the town and the others in rural districts up to 30 kilometers away.

A number of years ago, education authorities decided not to build an intermediate school in the town. (Intermediate schools have 11- and 12-year-olds only, in schools intermediate in organisational style between primary and secondary.) Following this decision, a series of meetings of local people and representatives of the education department and board adopted three principles to establish closer primary-secondary ties.

1. Because it was believed that for many Form 3 pupils (first year at high school) the adjustment to secondary school is difficult, every step should be taken to smooth the transition.

2. If education is to be viewed as a continuous process, then it is desirable to break down any barriers that might exist between primary and secondary schools.

3. Because there would be no intermediate school, pupils should have some of the opportunities available to city pupils, such as specialist staff and facilities.

In consequence, a planned linkage scheme has been developed. Early each year, a one-day meeting occurs of all teachers of Form 2 classes and several secondary teachers. They plan a seven-lesson unit of work from a Form 1 to 4 syllabus; this is printed as a booklet and the lessons are given in the third term. Other issues of common concern are discussed, e.g., co-ordinating teaching across primary-secondary levels in particular subjects.

Late in Term 1, an orientation or familiarization visit to the secondary school is made by all Form 2 pupils. This 'Cooks tour' lets pupils see the secondary school for themselves and they are guided by senior secondary pupils. In Term 2, a second visit gives them experiences of secondary routines such as room changes for different classes, and they sit in on lessons in progress. A parents' evening explains how the school operates and what it offers pupils. All Form 2 pupils receive the secondary school newsletters and a regular local section in a provincial newspaper has frequent references to school activities.

Term 3 sees the teaching of the unit planned early in the year. For example, a science unit is seven lessons, four taught by primary teachers in their own school and three by secondary teachers during further visits to the

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secondary school. An end-of-year meeting evaluates the teaching and chooses a topic for the following year.

In October, a process of collecting information about Form 2 pupils begins, aiming at getting the best placement of pupils into Form 3 subjects and home groups. The third form dean visits each contributing school to talk to Form 2 pupils as a group and to issue enrolment forms, and give 'profile' forms to the teachers. At a later visit, the dean interviews each pupil and the parents to discuss fully the pupil's school progress, interests, preferences, and personality and to discuss each pupil with the teacher. A form for the primary teachers to fill-in has evolved out of a series of primary-secondary discussions over some years. It includes any standardized test results, subject assessments, personality characteristics, and strengths and weaknesses. The dean keeps a confidential notebook for any additional 'off the record' data.

Having collected the information, the secondary school uses it to place pupils into classes, and then stores it in a filing system that is accessible to all staff. It is, however, difficult to determine accurately how much use was made by secondary teachers of the information supplied by their primary teacher colleagues. It seemed to vary a good deal from teacher to teacher. At the start of the year the dean made a list of essential information, such as health factors, and placed it on a staff noticeboard and reminded teachers to check it.

This linkage scheme was well-known to students, teachers and the public and was viewed favourably. It was generally believed to be of benefit to the students making the transition.

There were few follow-up contacts between primary and secondary teachers, but this was probably because the job had been thoroughly done at the end of the previous year. In contrast the third form dean said about pupils arriving from outside the catchment area:

> Some don't even come with any written information. Some will not bring a report or have not got a report. I've written letters to schools and in general found the response pretty poor.

Primary teachers related a similar story when their Form 2 pupils went to other secondary schools. The process of providing information was impersonal and less than satisfactory.

In addition to the primary-secondary contacts above, there were periodic inter-staff social events, visits to the secondary school for sporting and cultural events, co-operation for a primary–secondary drama production, and various other uses by primary teachers of secondary school equipment and facilities. However, there were few other curriculum-related contacts.

Primary principals had no doubts about benefits. One said:

> . . . there have been some wonderful experiences for our pupils to introduce them to secondary school . . . I know that some of the things they do in Science lessons [linkage lessons] are gimmicky, but it certainly enthuses the children. . . . They really do look forward to going to high school with very little trepidation and with quite a lot of confidence. The high school teachers tell us they have very few teething troubles. . . . Everything's underway in the first week, they say. . . . The school makes a big issue of identifying the kids right from the beginning . . . so the children are made to feel comfortable.

What factors are at work? A key factor is the attitude of two senior school principals who had been in the linkages scheme from the outset. The secondary school principal was praised by most primary principals for his interest and enthusiasm and his encouragement of contacts between his school and the primary ones. The secondary principal took care to choose a third form dean committed to the objectives of good linkages and encouraged his staff to reflect a similar commitment. This was appreciated by primary colleagues, one of whom said:

> . . . when we are working there at the high school we are always welcome, we are always on friendly terms. . . .

Another said:

> . . . The thing that impresses me very much is the kind of really professional attitude of the secondary people . . . I think they are thinking of the kids the whole way along the line.

Even though a few primary teachers felt some secondary teachers at times showed a superiority complex, and the secondary principal conceded he had to watch some of his teachers in this respect, primary–secondary teacher relationships in this community were mostly positive and friendly. This was helped by some teachers living in the same part of the town and some marriages across sectors. Some teachers had taken advantage of invitations to visit classrooms in the 'other sector'. The third form dean was a frequent visitor and was made welcome.

> I can just walk into any classroom, especially over the road [the adjacent primary school] . . . they don't mind at all, the class just carries on. Two primary teachers recently came and spent a day here. There is an open invitation to that.

The primary schools annually appointed one of the teachers of Form 2 as a linkage co-ordinator. Contacts were made with Form 2 teachers and principals new to the catchment area and a major role was taken in administering the linkages scheme in collaboration with the secondary school.

Finally, the students themselves had positive views about the linkage scheme. A survey carried out by a recent third form dean showed that third formers (first year at high school) were unanimous that their Form 2 visits to the secondary were valuable and ought to be continued for future students. Nearly all of them also said the visits had helped them get to know the school and reduced their fear about what it might be like. They liked the friendliness of the secondary teachers they had contacts with. One class of Form 2 children was asked to write what they thought of their linkages visits. Again, nearly all of them had positive things to say that far outweighed any reservations.

Summarizing the Case Studies

I have described the cluster that had easily the most advanced type of transition or linkages programme. In this and other case studies, the main primary–secondary contacts were to do with:

1. The transfer of information about primary students.
2. Familiarising primary students and their parents/guardians with their local secondary school (to which most of them would go.)
3. Sharing facilities and equipment.
4. Teacher contacts about curriculum and teaching.

The number of secondary staff involved in these activities was usually very small; key people such as the principal, third form dean and perhaps the guidance counsellors. Most primary teachers were spoken to about their students by one of these people, but did not necessarily have many additional contacts.

Curriculum contacts were few and far between. Because there are several syllabuses which apply across the break and because achieving continuity in any subject makes good sense, it might have been expected that links would have been established about such matters. But this was not the case. In the six case study secondary schools, the number of Form 3 teachers who made contact with primary teachers (in 1985) ranged from 0 to 11. Clearly then, there is room for improvement, especially when it is remembered that I was looking at some of the 'better' schools for contacts. The contacts that did occur were

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mostly to do with discussions about planning co-ordinated Form 1 to 4 syllabus, subject association meetings, planning topics, developing resources, and observing in classrooms. The best example was a co-ordinated Form 1 to 4 social studies theme developed by teachers from an intermediate school and their colleagues in the local secondary school.

Factors that Make Linkages Effective

Primary–secondary contacts are disappointingly few. However, the case studies revealed that certain factors are important in improving the number and *effectiveness* of the contacts.

1. *Transfer of Students*

1 detailed information about each Form 2 student was provided by the primary school and used by the secondary school to place the child into a Form 3 class, and when it was used as the basis for special provisions, such as those for students with learning difficulties;
2 the forms used for transferring such information were jointly worked out by primary and secondary teachers, and agreements reached on interpreting assessments and comments;
3 face-to-face discussion of each student (and the information forms) took place between secondary teachers and the primary teachers;
4 information was transmitted to those teachers who were to teach the students in Form 3, and to form teachers;
5 Form 3 teachers felt an obligation to become familiar with the information from the primary school and take account of it in their teaching (without permanently labelling students);
6 Form 2 teachers felt their information was valued by the secondary school and there was therefore good reason for putting a lot of effort into providing useful information;
7 some feed-back was provided by the secondary school to primary schools about the progress of Form 3 students;
8 particular staff members in both primary and secondary schools were given responsibility for this work and were carefully chosen on the basis of their skills.

2. *Orientation of Students to Secondary Schools*

1 students and parents were provided with detailed information about the secondary school during the student's last primary year and invited to the school so that it became familiar;
2 students and parents were interviewed by secondary staff about their intentions and aspirations, and full discussion held on the courses and activities of the secondary school;
3 enrolment forms were set out in a straightforward manner that was easy for most parents to read, understand and complete, and when the forms were used as a basis for discussion during student-parent-school interviews;
4 secondary staff, in collaboration with primary teachers, visited primary schools to talk with Form 2 students about their school and listened to (and responded to) students' fears, anxieties and questions;
5 orientation tours of the secondary school were made by primary students towards the end of the Form 2 year, and their visit included a welcome by secondary staff and students (perhaps by cultural groups) and a look at facilities and lessons in progress;
6 final year primary students were taken to the secondary school for a series of lessons to become familiar with the new situation (especially in rural districts);
7 detailed orientation booklets were prepared by the secondary school for Form 2 students and their parents or guardians; and
8 orientation programmes were conducted in the first week of Form 3, with form teachers, third form dean and other key staff taking the major responsibility for helping students adjust.

3. *Information About School Activities*

In a school cluster, many families have children attending primary and secondary school. It was found that clashes in school activities often caused complications. Families could participate more effectively when:

1 schools in a cluster informed each other of their activities by providing lists and negotiating conflicting events;
2 school bodies such as school committees, boards of governors, and parent-teacher associations, etc., contained representatives from both local primary and secondary schools.

4. *Impetus for Liaison*

The effectiveness of liaison between schools was increased when:

1 school principals were committed to a belief in close ties between secondary schools and their contributing schools;
2 regular meetings were held at the upper leadership level between secondary and contributing schools;
3 encouragement was given by principals for their teachers to be actively involved in linkage practices and responsibilities were delegated to other staff who had a commitment to good linkage;
4 the relationships between primary and secondary principals were based on friendship and professional trust;
5 schools were in close proximity to each other;
6 deliberate steps were taken to overcome physical distance;
7 primary and secondary principals belonged to the same principals' association.

5. *Sharing Facilities*

The contacts between primary and secondary teachers to do with curriculum and teaching were most effective when:

1 principals of a primary and a secondary school had good relationships and had made known a willingness to share facilities or lend equipment;
2 this willingness was made known to the rest of each school staff;
3 teachers felt able to ask without fear of a negative reaction;
4 individual teachers had common interests or joint involvement in subject associations or subject co-ordination, and had got sharing established.

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6. *Curriculum and Teaching Contacts*

The contacts between primary and secondary teachers to do with curriculum and teaching were most effective when:

1 goodwill existed which included willingness to work as professional equals;
2 encouragement for contacts was given by school principals;
3 joint staff meetings were held to discuss common concerns and issues;
4 teachers from one sector visited and observed in classrooms taught by teachers in the other sector;
5 groups met to plan co-ordinated schemes, programmes and units for Form 1 to 4 syllabus subjects;
6 teachers participated in activities involving primary and secondary students, such as a primary and a secondary music teacher jointly taking a primary-secondary orchestra and choir;
7 primary students visited a secondary school for lessons when a facility was not available at the primary school (e.g., a computer lab.);
8 primary and secondary teachers belonged to the same subject association;
9 primary and secondary teachers attended joint in-service courses;
10 there was reasonable continuity of staff to achieve long-term developments (as in a secondary department working with intermediate teachers to develop a co-ordinated scheme); and
11 time could be set aside for regular meetings when engaging in curriculum work.

Barriers to Effective Linkages

It became clear from the case studies that any of the factors could, in different circumstances, work as a barrier instead of a route to good transition. For example, if the relationships between a secondary principal and an intermediate school principal occupying adjacent school sites were negative then it is unlikely that any effective liaison would occur.

Teachers identified a number of factors that were barriers to establishing and maintaining contacts with teachers in the other sector, especially curriculum teaching contacts. These were finding time, proximity (it was harder where schools were some distance apart), staff changes which affected continuity of contacts, lack of understanding about the nature of the job in the other sector (often associated with unsubstantiated stereotyped perceptions or comments), and the existence of separate primary and secondary services and teacher associations.

Conclusion

For the future, policy-makers ought to consider the following:

1. A package of ideas for principals should be developed on how successful and effective linkages can be established.
2. Some form of 'captured time' ought to be available to enable primary and secondary teachers to meet for curriculum co-ordination.
3. Organizational changes are needed to achieve closer working relationships in the inspectorate, advisory services and other agencies currently divided along primary–secondary lines.
4. Pilot linkage schemes in clusters of schools should explore ways of achieving more effective Form 2–3 linkages. This could well be via research projects, on, for example, the perceptions of school students and the school community about the transition between primary and secondary schools.

Finally, the primary and secondary teacher organizations could lead the way to greater liaison and continuity by exploring ways of settling their differences and establishing a single, co-ordinated teacher organisation.

Notes

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Learning and Teaching Writing

The IEA Written Composition Study

By Hilary Lamb
NZ Department of Education

The Study

IN 1984, in one hundred Form 2 (Year 7) classes and in one hundred Form 5 (Year 10) classes throughout New Zealand, six thousand children wrote three pieces each. Their work was collected and the 18,000 pieces analytically marked according to internationally agreed criteria. Now the results are known. Not all the international results and comparisons from the other 13 countries and systems are available. It would be good to know 'how well New Zealand scored', but there are dangers in that – international surveys are sometimes treated as academic Olympics. However, some generalisations can be made and we can draw out consequent implications for teaching writing.

Letters

Three tasks involved writing friendly letters. The best writers combined a fluent command of the required familial or friendly tone with descriptive ability and precise language choice. Where writers used intrusive or irrelevant material, vague and partial information or pedestrian language, they did not score well. Recall, selecting material and producing an ordered sequence were also required, and on these tasks students were clearly good or bad.

Two formal letters were called for and gave the writers fewer problems, possibly because of the clear directions for content. In the Netherlands and England scores were also high in this task. In New Zealand the letter to the Principal was the top-scoring task for Form 5 students, with 81% of students gaining a grade of 3 or better. It may be that students were able to visualise their principal as the specific audience for the letter, with the result that a formal, courteous style and tone was observed. It was a feature of low-scoring scripts that an inappropriately colloquial informal tone was used. This informal register was also seen in scripts by Form 2 students in New Zealand, but whether this was a lack of familiarity with the conventions of formal messages or because they saw their principals as approachable friendly adults, is not clear.

When writing the other formal letter, an application for a summer job, some students found it difficult to imagine the audience and the recipient's point of view. Perhaps this was because the audience was someone unknown – a personnel manager. In the English and American samples, this task created problems for a large number of students. Some found the level of formality difficult, so that a serious and distant tone at times became pompous or clumsy. In New Zealand, however, 72% of students gained a grade of 3 or more in this task.

Stories

The *narrative* task was to write on an episode that could have happened to you. The dimensions of content, organisation and style were revealed as closely interdependent. Competent writers generated and selected appropriate content, successfully handled the chronology of the episode, were aware of the reader, understood that one purpose of this task was to entertain, and so controlled the form and style of story-telling.

Students who drew on their own experience produced lively, fresh essays. The better narratives showed an honesty of perception, a freshness of voice and sometimes a sense of humour. Such features were usually lacking in plots culled from television programmes, comics, films or popular teenage fiction.

The difference between high and low achieving writers was apparent in the sense of audience. Although the audience for the narrative was an unspecific 'reader' (unlike the functional letter tasks), better writers showed an understanding that for every story-teller there is a listener. They used many techniques to involve and manipulate the reactions of the reader: deliberate constructions for denouement; surprise endings; delayed action; conversation and internal monologue; the colloquial style of a raconteur; deliberately heightened and expressive vocabulary; and variation in sentence structures. Introductions showed varying degrees of sophistication, and often dictated the structure and tone which followed. The most common opening by New Zealanders was a descriptive paragraph, the establishment shot common in film, as a physical, emotional or historical context for the story. There was also evidence in introductions (and conclusions) of reflection on the episode, and adjustments by the writer to the point of view of the audience. Other opening strategies included varied chronomogy, such as flashbacks, the narrative framework of a story within a story, immediate action often using dialogue, and even the occasional classical technique of beginning 'in media res', in the middle of the action.

Not all experimentation was entirely successful. Weaknesses in planning led some students to emphasise the detailed chronology, such as flashbacks, the narrative framework of a story within a story, immediate action often using dialogue, and even the occasional classical technique of beginning 'in media res', in the middle of the action.
cially in introductory material, so that, after a long and time-consuming list of domestic detail or minor events, the heart of the story was added hurriedly at the end.

This narrative writing was the highest scoring essay-style task in New Zealand for Form 5 (Year 10) although the formal letters proved least difficult overall. The Netherland's report comments that real quality was rare in their stories but for the British the narrative was the least difficult task.

Argument

The writers were also asked to produce a *persuasive* or *argumentative* essay. This was to be on any problem or issue about which they felt strongly. Each writer was required to generate the content, including illustrations or incidents as supporting material, and to organise this material logically and systematically in order to persuade the audience to share that point of view. The writer could take the stance of an adversary, or give a balanced perspective.

The choice of problems was wide-ranging, from egocentric concerns to global issues. Some of those who wrote on general ethical problems had little to say beyond half-understood, regurgitated views, but mature writers with a genuine interest in the topic usually produced high-scoring scripts. Not all high scores were on these wider topics; some on personal and family problems were equally high. The use of minor issues sometimes led to problems in generating enough material, and less able writers penalised themselves by selecting subjects with limited breadth of content.

Deep feeling and seriousness did not necessarily result in high achievement. Vehement style could become a tirade, lacking in logic and, at least in New Zealand, depending on peremptory rhetorical questions and insistent statements. A balance between forthright views and persuasive style was difficult to maintain, and the registers shifted from formal to colloquial. In these essays, a bald description of a problem, or the blunt declaration that there was a problem replaced argumentation, logic or persuasion. Repetition or even listing of ideas were substitutes for emphasis or supporting arguments, links between ideas were tenuous. Limited language choice and sentence structures reflected the vague or limited ideas, and the spoken mode was intrusive.

Those who were confident in the genre knew their topic, and pleaded their case. They defined the issues, took a clear stance, recognised and rebutted counter arguments.

Their framework for persuasion varied from the traditional rhetorical style to include narrative of a relevant incident, or a formal debating style.

Reflecting

The reflective essay, Task 7, was the most academic and the most difficult of all the tasks. The essay, as a literary form, might be described as a process by which writers clarify their thinking. At its best it offers new perception and understanding through association, comparison, evaluation and exposition. It involves the writer in a subtle balancing act – sustaining a personal view while acknowledging the opinions of others. The focus is on the topic, rather than the writer or the reader.

In this study students were asked to philosophise a little on a topic chosen from six areas of broad human concern. These ranged from the relatively familiar such as television, or the generation gap, to the more abstract, such as loneliness or the power of possessions. Not many students at this level had the maturity of reasoning or broad general knowledge necessary to distance themselves from strident argument or mere personal anecdote. High quality scripts stated a clear position, drew inferences, and acknowledged implications of, or alternatives to, such a position. They were rewarded for developing reasoning and analysis to support their stance, for clear and varied structures of organisation, especially transitions, introductions and conclusions, for a range of sentence structures, and for concise and often original expression.

In low-scoring scripts the wider perspectives suggested by the topics were usually not recognised. Argumentation took the form of simple personal statements unsupported by examples, or of stereotypes or irrelevant digressions. For instance, the content of low-scoring New Zealand essays on the television topic sometimes contained little more than a catalogue of favourite programmes. These writers could not read beyond the literal meaning of the starter material, and lacked logic and reasoning. They had problems with the cognitive level of analytical processing required. In New Zealand, students at 15 would not have been very familiar with this type of writing. Students in this group also failed to perceive the need for a different style and tone from the argumentative/persuasive task, and sometimes used oratorical or spoken forms of expression.

Implications

Depth, Content Familiarity

ALREADY some of the implications for classroom practice will be apparent. The students' writing performance varied substantially depending on how familiar the student was with the task. The analyses of the New Zealand results points to the importance of students feeling in control of their material for high performance. Accuracy in the mechanics of spelling, grammar and usage went with the student's confidence. Where the writer knew what he or she wanted to say the mechanics of spelling, grammar, and appropriate diction were more often correct. Where the writer was struggling with ideas and content the mechanics got worse too.

Maturity

More complex tasks such as argumentative or reflective writing may be beyond the majority of students at this stage (12 years and 15 years) demanding a level of cognitive development which many students do not reach until aged 16 or more. When Form 2 and Form 5 (Years 7 and 10) students attempted these tasks their writing deteriorated in many ways and in effect they regressed to a lower level of mechanical accuracy, vocabulary use and sentence structure.

Early findings from some of the other countries reveal the same patterns and suggest that acquiring the skills necessary for argumentative or reflective writing comes only with the maturity of the writer and is not because of deficiencies in any teaching programme. Students in secondary schools must cope with increasingly large amounts of complex material to read and translate into notes. This material may later have to be turned into 'literary' or 'academic' essays and students have little experience or formal training in this skill. Such writing has specialised patterns and may require new strategies for reading, and for the teaching of writing.

Preparation

This study points to the worth of classroom discussion for providing context and background for students before they attempt expository or persuasive writing. Just as students make more sense of what they are reading if they know the context and background of the test, so too they write better if they have access to a broad range of content. Younger students may also need help in defining the topic and choosing elements for examples, illustration and counter-argument in persuasive and expository writing.

There is also strong evidence of the value of reading as a factor in writing performance. This was seen especially in the fluency and familiarity of students with the variety of structures and styles in narrative writing.

More revelations

Girls

A CONSISTENT finding which emerges is the higher achievement of girls. It is hard to say why girls perform better in writing. The subjects they choose to take at school may allow them more practice in extensive written activity because it is quiet individual work. The topics teachers choose for writing, especially at secondary school, may suggest to boys that writing is a feminine occupation. There may be a difference in maturation: at 15 girls are keen to analyse and put a point of view while boys prefer story writing on fantasy topics, the same topics preferred by 12-year-old boys. Nevertheless, the best examples of narrative and expository writing still included boys' scripts.

Some constraints

All the scripts analysed were first drafts, written under test conditions without preparation or time for much revision and editing. This was in contrast to the modern classroom practice of allowing students to work and rework their texts. A few schools declined to take part in the study because of this emphasis on judging product and first draft writing which was opposed to their school's practice of concentrating on the *processes* of writing. Students mentioned planning and revision as important aspects of processing their ideas when writing and the lack of time for these must be seen as a constraint on the writing done for this study.

Spelling, Punctuation and Grammar

Spelling error rates in this study show that there has actually been a slight increase in accuracy since Nicholson's survey in 1970. Moreover the IEA measures are conservative, giving high error rates. Counted as mistakes are slips of the pen; and inconsistencies in spelling, grammar or punctuation where students correctly spelt a word in one line and yet make a mistake several lines further on. Under 'normal' writing conditions these mistakes might disappear, given revision and the reworking of compositions.

Standards

Comments in the media about standards of writing often concentrate only on surface errors of spelling and grammar. They ignore such things as the level of cognitive difficulty of the writing task, the quality and scope of ideas, diversity of language choice, complexity of linguistic structures, or the organisation of the content. Any measure of spelling, grammar or punctuation must take account of the breadth of vocabulary used as well as other dimensions of writing. Students who make few errors may in fact be using extremely simple linguistic structures and vocabulary whereas inaccurate spellers may be inventing spelling in order to use more expressive language which is just beyond their learned written vocabulary. It would be harsh to penalise creativity in an effort to enforce correctness.

Children's Advice

Secondary analysis of one of the friendly letters provided a picture of what students knew and thought about school writing, and the values they placed on different aspects of writing.

The most frequently given advice was on neatness of presentation, correct spelling and punctuation i.e., on surface features of writing. New Zealand children ranked content second, with comments such as 'be original' and 'keep to the topic'. The better writers had more of value to say than poorer writers, who tended to list five surface features. This result is true in most other countries too. The British report suggests that poor writers are bewildered, wonder what might constitute good writing, and look for quite separate factors, such as behaving well in class as the way to achieve good marks.

Their responses do suggest that we need to communicate our criteria very clearly. Knowledge about writing precedes the power to write, so we must also teach an awareness of the processes of writing. But even when students know the ideal, they cannot always put it into practice – comparing the advice they gave with their scores confirmed that knowing *about* is not always knowing *how*. An explanation of the dimensions of each task (as outlined in an analytical marking scheme) may help students to understand more clearly what is expected of them, when they are given the writing assignments, and not after the work is returned to them.

Matching Techniques and Goals

THERE seems to be some discrepancy between the teachers' stated aims (usually developmental and pragmatic goals) and the activities used to teach writing in the classrooms. Much of the writing in classrooms, across the curriculum, is copying, not composing text. This recital of material organised by someone else may provide models of writing. But opportunities for students to assemble, order and process their own ideas are needed.

Students, from Form 2 (Year 7) on, write more and more; they need a far greater range of writing activities which involve a variety of audiences and styles, beyond narratives and letters, and they need to be taught organisation skills. Perhaps we need *more* scrutiny of *less* writing.

Writing to Think

With revising and monitoring one's own work comes the skill of using writing to think and analyse, to solve problems with strategies, to assess one's own knowledge and extend it. At this point we are writing to learn. Other familiar activities are efficient and enjoyable but research in America and in New Zealand shows that the writing tasks students are given do not require them to think deeply enough.

To improve the teaching of writing is to improve the quality of thinking, the higher order thinking skills of students. It is to help students communicate ideas, learn new information and solve problems.

This IEA study, and David Phillips' study of writing in four classrooms (see *set* 1986, No. 1, item 12) have revealed a lack of variety in teaching programmes, even within the practice of 'process writing'. It is a feature which is not specific to New Zealand classrooms. The recent report from the National Assessment of Educational Progress (NAEP) in America says:

> The results . . . suggest that American schools have been successful at teaching students to formulate quick and short interpretations, but they have not yet developed in students the skills they need to explain and defend the judgements they make. The end result is an emphasis on shallow and superficial opinions at the expense of reasoned and disciplined thought . . .

Judith Langer, one of the authors of the NAEP survey, claims that *activities do not create purpose*. Rather, in the successful classroom, *purpose creates activities*, and shapes the ways in which they are carried out. Where writing is used as evaluation, the audience is still the teacher, the content is a replication of the teacher or the text, and evaluation is through grading. Where writing is used for thinking, it is for the students themselves, it encourages experiment and exploration, the writing process becomes the learning process, the language is the students' own language. Grading and assessment may be delayed, but will be more revealing.

As Judith Langer observed in successful classrooms: where writing has a clear purpose, it works to prepare for new learning and to access knowledge; to review knowledge and draw new learning together; to find out what is not yet understood, and to extend and rethink knowledge, to relate it to a new context. New activities, such as journals, writing logs, planning and pre-writing activities, peer conferencing, have been enthusiastically taken up, but often incorporated into old purposes. The goals have not changed. Students are still writing to please the teacher, rather than to think deeply.

We need to take every opportunity to explore and explain what we are doing and why and to celebrate the good things that are happening in our classrooms. The IEA Written Composition Study is a start.

Notes

Hilary Lamb, now the Principal of Queen Margaret College, 53 Hobson St, Wellington, was national research co-ordinator for the IEA Written Composition Study when this report was prepared.

The NAEP survey report is

Applebee, Arthur and Langer, Judith. *Writing Report Card* (1987) Washington D.C.: National Assessment of Educational Progress.

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The 'Seville' Statement on Violence

Sally McArd

BELIEVING that it is our responsibility to address from our particular disciplines the most dangerous and destructive activities of our species, violence and war; recognising that science is a human cultural product which cannot be definitive nor all encompassing; and gratefully acknowledging the support of the authorities of Seville and representatives of the Spanish UNESCO, we, the undersigned scholars from around the world and from relevant sciences, have met and arrived at the following Statement on Violence. In it, we challenge a number of alleged biological findings that have been used, even by some in our disciplines, to justify violence and war. Because the alleged findings have contributed to an atmosphere of pessimism in our time, we submit that the open, considered rejection of these misstatements can contribute significantly to the International Year of Peace.

Misuse of scientific theories and data to justify violence and war is not new but has been made since the advent of modern science. For example, the theory of evolution has been used to justify not only war, but also genocide, colonialism, and suppression of the weak.

We state our position in the form of five propositions. We are aware that there are many other issues about violence and war that could be fruitfully addressed from the standpoint of our disciplines, but we restrict ourselves here to what we consider a most important first step.

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IT IS SCIENTIFICALLY INCORRECT to say that we have inherited a tendency to make war from our animal ancestors. Although fighting occurs widely throughout animal species, only a few cases of destructive intra-species fighting between organised groups have ever been reported among naturally living species, and none of these involve the use of tools designed to be weapons. Normal predatory feeding upon other species cannot be equated with intra-species violence. Warfare is a peculiarly human phenomenon and does not occur in other animals.

The fact that warfare has changed so radically over time indicates that it is a product of culture. Its biological connection is primarily through language which makes possible the co-ordination of groups, the transmission of technology, and the use of tools. War is biologically possible, but it is not inevitable, as evidenced by its variation in occurrence and nature over time and space. There are cultures who have not engaged in war for centuries, and there are cultures which have engaged in war frequently at some times and not at others.

IT IS SCIENTIFICALLY INCORRECT to say that war or any other violent behaviour is genetically programmed into our human nature. While genes are involved at all levels of nervous system function, they provide a developmental potential that can be actualised only in conjunction with the ecological and social environment. While individuals vary in their predispositions to be affected by their experience, it is the interaction between their genetic endowment and conditions of nurturance that determines their personalities. Except for rare pathologies, the genes do not produce individuals necessarily predisposed to violence. Neither do they determine the opposite. While genes are co-involved in establishing our behavioural capacities, they do not by themselves specify the outcome.

IT IS SCIENTIFICALLY INCORRECT to say that in the course of human evolution there has been a selection for aggressive behaviour more than for other kinds of behaviour. In all well-studied species, status within the group is achieved by the ability to co-operateand to fulfil social functions relevant to the structure of that group. 'Dominance' involves social bondings and affiliations; it is not simply a matter of the possession and use of superior physical power, although it does involve aggressive behaviour. Where genetic selection for aggressive behaviour has been artificially instituted in animals, it has rapidly succeeded in producing hyper-aggressive individuals; this indicates that aggression was not maximally selected under natural conditions. When such experimentally-created hyper-aggressive animals are present in a social group, they either disrupt its social structure or are driven out. Violence is neither in our evolutionary legacy nor in our genes.

IT IS SCIENTIFICALLY INCORRECT to say that humans have a 'violent brain'. While we do have the neural apparatus to act violently, it is not automatically activated by internal or external stimuli. Like higher primates and unlike other animals, our higher neural process filter such stimuli before they can be acted upon. How we act is shaped by how we have been conditioned and socialised. There is nothing in our neurophysiology that compels us to react violently.

IT IS SCIENTIFICALLY INCORRECT to say that war is caused by 'instinct' or any single motivation. The emergence of modern warfare has been a journey from the primacy of emotional and motivational factors, sometimes called 'instincts,' to the primacy of cognitive factors. Modern war involves institutional use of personal characteristics such as obedience, suggestibility, and idealism, social skills such as language, and rational considerations such as cost-calculation, planning, and information processing. The technology of modern war has exaggerated traits associated with violence both in the training of actual combatants and in the preparation of support for war in the general population. As a result of this exaggeration, such traits are often mistaken to be the causes rather than the consequences of the process.

We conclude that biology does not condemn humanity to war, and that humanity can be freed from the bondage of biological pessimism and empowered with confidence to undertake the transformative tasks needed in this International Year of Peace and in the years to come. Although these tasks are mainly institutional and collective, they also rest upon the consciousness of individual participants for whom pessimism and optimism are crucial factors. Just as 'wars begin in the minds of men', peace also begins in our minds. The same species who invented war is capable of inventing peace. The responsibility lies with each of us.

Seville, May 16, 1986.

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The Deep Structure of Schooling

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The Deep Structure of Schooling

Barbara Benham Tye

No matter where you go in the world, secondary schools have a lot in common. This article describes high schools in the USA, but the description of the good news and the bad, problems and solutions, traditions and innovation, rings very true for Australia and New Zealand.

WALK into a public high school in any of the 50 states, and you are likely to find yourself in familiar territory. You will not be surprised by the physical uniformity of classrooms; the overall control orientation of policy, program, and pedagogy; the general similarity of curriculum and of schedule; the reliance on test scores as measures of 'success'; and the practice of streaming.

American high schools are very much alike. But at the same time they are very different. This is one of the persistent paradoxes of American schooling. The findings of John Goodlad's Study of Schooling reaffirm this paradox. In terms of what Seymour Sarason has called the 'regularities of schooling,' all 13 high schools that Goodlad's team studied were very much alike indeed. This was true even though they varied in size from 64 to 3,006 students, in location from inner cities to isolated rural settings, and in socioeconomic level from poor to upper-middle-class.

I have come to think of the common characteristics of schooling as its 'deep structure.' Yet each school I studied as part of the Goodlad team was also different from the others in dozens of big and little ways. The cumulative effect of these differences gave each school its particular 'personality.' Each of the 13 high schools was shaped by its own history, by the nature of the community of which it was a part, and by such internal factors as the quality of teacher/administrator relationships, the number and intensity of school problems, and the climate of most of its classrooms.

This juxtaposition of concepts – the deep structure of schooling and the distinct personality of schools – can be used heuristically to think about the problems of change and resistance to change in our educational system. Some readers might be inclined to argue that the similarities of schools obviously outweigh their differences, since the likenesses have to do with the deepest structures and assumptions of schooling in our culture. As long as one is primarily concerned with *describing* schools, it may be true that commonalities are more important.

However, if we are concerned with the processes involved in *improving* schools, the differences become equally important. The key to changing a school lies in the particular configuration of forces that give *that* school its unique personality. For this reason, a change strategy that works at one school might not work at another, and changes mandated at the district or state level will be implemented with varying degrees of success in the schools to which those mandates apply.

Deep Structure

THE DEEP STRUCTURE of schooling is determined by the values and assumptions that are widely shared throughout our society. Americans do not vary greatly in their views of desirable and appropriate educational experiences for children and young people. These values and assumptions are also shaped by conventional wisdom, by tradition, by vested interests – and by a certain amount of institutional inertia.

I have already mentioned several components of the deep structure. Let us examine one in particular. The assumptions that undergird decisions about the use of space in schools form one component of the deep structure. Whether you spend your days in an 'old-fashioned' three-storey school building or a 'modern' one-storey finger- or pod-style building, the classrooms are awfully similar. Whatever the design of the school, the physical environment of the high school classroom reinforces the passive behaviour of students and makes it easier for adults to contain and control them.

First, all of the 525 high school classrooms we studied in A Study of Schooling were large enough to accommodate between 20 and 35 people, but *only if those people were behaving in certain ways*. The standard high school classroom is not large enough for 30 people who are square dancing, fencing, or practising karate. More realistically, it is often not even enough for six small groups to carry on discussions without disturbing one another. The typical high school classroom is just about right, however for 30 people to watch a film, listen to a speaker, take a test, or read a book. This is true because all the latter activities require that people engaging in them be *seated* and *noninteractive*.

Second, whether the room is furnished with individual desks or with tables large enough for six people, there is a place for every person to *sit down*. Not a cushion or a couch, mind you, but a chair. Furthermore, students are often assigned to a *certain* chair and told that they may use no other. Moving around the room is discouraged, and the range of possible learning activities is further narrowed to those that can be done while seated in a chair.

Finally, the desks or tables in the typical high school classroom are usually arranged in rows, facing in one direction. This arrangement reduced the amount of interaction possible among students. Frontal presentation to the whole group was the teaching method most often used by the teachers in our sample. Was this because the desks were all facing the front of the room? Yet the desks were always *movable*; the teacher *could* easily enough have used a non frontal method, such as small groups. In the past, when desks were customarily bolted to the floor, teachers may have been required to lecture more than they might have liked; that is no longer the case. Today however, form follows function: the seats all face the same way *so that* the teacher can lecture.

The rationale for this heavy reliance on frontal teaching is that the teacher possesses certain knowledge that the students need. Because the students are at a given grade

and ability level, the teacher assumes that almost all of them need to learn the same things. True, a few probably know the information already, and others may never learn it, but *most* of them need to learn it and can learn it. The teacher must, therefore, reach the majority. Besides, if a teacher is talking to the whole class at once and can see all their faces, *it's a lot easier to stay in control* and keep them all quiet.

Thus we see a strong connection between the use of space and what I have termed the 'control orientation' of schooling. Both are aspects of the deep structure – so taken for granted that we almost never think to challenge them. An emphasis on controlling students has been part of the deep structure of American schooling since colonial times, when society regarded children as little animals in need of taming. This legacy is still with us, and it determines the decisions of school boards and architects, as they continue to design high schools full of the standard classrooms I have described.

The control orientation of schooling is with us, as well, in the assumptions of teachers in the newer open- or flexible-space schools, in which many teachers yearn for traditional, closed-off classrooms and plead for the construction of permanent walls. And it is with us in the assumptions of principals, parents, teachers – in fact, most of us – that a quiet room is a room in which learning is taking place and a noisy room is a room in which nothing constructive can possibly be happening.

The control orientation of schooling can be seen in many other aspects of the way high schools are run. Closed-campus policies, for example, stem from the assumption that students *will certainly* abuse freedom if given the chance. Unfortunately, by removing the opportunity to misbehave, the school administration does not allow students the opportunity to behave well. A similar point can be made about disciplinary rules that specify what the teacher expects from the class. Yet one rarely finds any public acknowledgement of what the students have a right to expect from the teacher.

The custodial role of the American school is well understood by all of us, but it is seldom discussed. We want our young people to be safe, off the streets. As parents, we want to know where they are – at least part of the day. This is an example of what I mean when I say that the deep structure of schooling is determined by values and assumptions that are widely shared throughout society.

It is important to remember this pervasive, *shared* aspect of the deep structure. Each school does *not* have its own deep structure; the deep structure of American schooling is *nationwide*. It is this connectedness that gives the deep structure its persistence and its power.

Unique Personality

BUILT ON THE FOUNDATION of the deep structure, however, are the unique personalities of each school. At *this* level, no two schools are exactly alike. I have suggested that a school's power to change is determined by the configuration of characteristics that make up its unique personality.

For example, suppose that a school staff decides to work together to improve the quality of interaction among staff members – a characteristic that is part of a school's distinct personality. The teachers decide that they want to increase co-operation and sharing among themselves. Whether this goal is relatively easy or relatively difficult to achieve depends in part on the quality of the communication that already exists among the teachers; on the intensity of other school problems that also claim the teachers' time, attention, and energy; and on the nature of the relationship between the teachers and the principal.

In a school in which teaching materials and supplies are scarce and in which communication among teachers is poor, co-operation and sharing may be very difficult to achieve. Hoarding is more apt to be the norm. However, in a school in which there is healthy, open communication and in which the principal actively works with teachers to help them identify and solve problems, the chances of dealing constructively with the problem of hoarding and of improving co-operation and sharing are much better. This is what I mean when I say that a school's *power* to change is determined by the configuration of characteristics that make up its individual personality.

Change and the Deep Structure

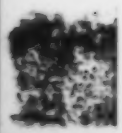
GOALS FOR CHANGE can be set at either level. However, a change in one or more aspects of a school's unique personality may well leave the deep structure unchanged. For example, teachers may work together to improve the quality of interaction among staff members, but this will not necessarily affect the curriculum, the bell schedule, the use of frontal teaching, or the assumption that students must be kept under control.

On the other hand, a change in *any* aspect of the deep structure will always affect many aspects of a school's unique personality, as well. It is as if one must go *through* the level of the unique personality in order to reach the deep structure; in fact, it may be necessary to *postpone* change efforts at the deeper level until certain changes at the more accessible level have been achieved.

In proposing that changes at the level of a school's individual personality probably need to precede changes at a deeper level, I do not mean to imply that changes in the deep structure are more worthwhile or important, only that they are far more difficult to achieve. They disturb the equilibrium of a school far more profoundly, and, because the educational system is so complex, they run a much greater risk of failure. The elements of schooling that I have called deep structure are rooted in the values and assumptions of our society, they are part of the conventional wisdom about schooling, and they have come to be accepted without question.

It is unlikely, therefore, that staff members would consider tackling a fundamental change in a school's deep structure. If they *did* decide to do so, they would have their work cut out for them. Let's say that the teachers at a medium-sized high school decided to work on using a wider variety of learning activities and materials in their teaching. In effect, they agreed to try and get away from the dominant pattern of lecture-question/test. Even reaching agreement on this goal would be difficult, given the deeply entrenched norm of classroom autonomy that exists in American schooling. But suppose that the teachers did set such a goal for themselves. What barriers to change would influence their efforts?

To some extent, the teachers would have to overcome their own training and experience, which prepared them primarily to lecture. They would have to be emotionally willing to take some risks, by trying unfamiliar activities and involving students in new ways in their classrooms. They would also be likely to encounter resistance from some students and from parents who believe that lecturing is the 'right way' to teach because that's how *they* were taught. The teachers might have to conduct an inventory of all the learning materials in the school and set up a



system to ensure that the materials would be readily available to those teachers who plan to use them. Perhaps the teachers would have to work with the principal, the parent/teacher association, or a district committee to locate funding for a wider variety of learning materials (newspapers, films, computers, etc.). They would also need to find consultants who could provide the in-service training that they would need in order to learn and practice the new teaching methods and learning activities.

These are just a *few* of the problems that would need to be solved in the course of a single effort to make a major change. On the whole, it is much easier to give up and return to the familiar, tried-and-true pattern: teachers talk; students listen and then take tests.

In my experience, most change efforts begin to falter in about the third year of implementation. A change that cannot survive the "Year 3 Crisis" is apt to have been a change that was undertaken without sufficient attention to all the systemic pressures and consequences involved.

Such changes as do take place in high schools tend to be at the more accessible level of the school's unique personality. Improving staff interaction, solving specific school problems, building mechanisms for shared decision making, and all the many other possible goals for school improvement at this level are extremely worthwhile. They can go a long way toward making an individual school a happier and more productive place. And that is all to the good.

However, American secondary education *as an institution* will not improve significantly as long as changes are made only at this level and only in individual schools. Changes in the deep structure of schooling, which is shared by all schools, must also occur, and these changes require the kind of substantive support that can come only from policy changes, accompanied by significant shifts in public perceptions of what schools should be and do.

For school people, thinking in terms of these two levels can teach us a number of important lessons about our own experiences with school improvement efforts. We can see, for example, that, without certain kinds of support, some battles may be virtually unwinnable. We would therefore be wise to choose our battles with care.

We can understand, too, that improvement at the level of a single school's unique personality is unlikely to alter the existing regularities of schooling at a deeper level. Indeed, the nature of the deep structure of schooling may thwart some change efforts at the level of unique personality. When we wish to make a change in our own school, we are often told, 'Better not rock the boat.' That's the voice of the deep structure we hear.

Finally, we can recognise why district or state mandates usually produce only superficial and uneven success: the idiosyncratic nature of the unique personality of each school thwarts efforts by education leaders to institutionalise school programmes in any sort of unified way throughout a district or state. Even when (as usually happens) teachers and administrators act in good faith to implement these mandated changes, the unique characterisitics of a given school's personality can get in the way. A wise policy maker understands this principle and makes room for local modification of required programmes.

Notes

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John Goodlad's Study of Schooling can be found in

Goodlad, John I. *A Place Called School*, New York: McGraw-Hill, 1984.

Tye, Barbara Benham, *Multiple Realities: A Study of 13 American High Schools*, Lantham Maryland: University Press of America, 1985.

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I am indebted to Seymour Sarason for the concept of *regularities*, both behavioural and programmatic. See

Sarason, Seymour, *The Culture of the School and the Problem of Change*, Boston: Allyn & Bacon, 1982.

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What's Keeping Them Back?!

Life choices and life chances.

By Ronald Sultana
Commonwealth Scholar

Therese: *Because, you know, Maoris are considered to be pretty dumb, you know. I've always had this strong desire to be a criminal defence lawyer, but that's a pretty high class job!*
R.S.: *And Maoris and high class don't go together?*
Therese: *Not really!*
R.S.: *Would Maoris and low class go together?*
Therese: *Seems to be these days . . .*
R.S.: *What's low class?*
Therese: *Just . . . They seem to all be city council workers, cleaners and all that.*

Some Facts

WHILE NUMBERS AND STATISTICS can be manipulated to shock or numb, most of New Zealand's teachers will not be surprised to learn that 59% of Maori school-leavers who find jobs go into manual occupations, that only 5% go into technical or professional work, that 49% of Maori students become unemployed on leaving school. After spending three years rubbing shoulders with New Zealand teachers, and a whole year in their classrooms, my guess is that they instinctively know that such statistics are close enough to the mark – they see these percentages come alive in their schools year in, year out. And perhaps because of the regularity of Maori 'failure' and 'underachievement', the 'Maori problem' has become something to be expected, to be coped with.

Some, openly, blame it all on innate ability (genetics), or on 'non-motivation', or on Maori parents not giving a high enough priority to schooling. Invariably the problem is *externalised*. Such teachers profess themselves to be neutral – they claim to teach their subject, to impart knowledge which anyone, white or brown, is free to pick up and use for intellectual, cultural, vocational, and by and by, financial advancement. An increasing number of Pakeha teachers who have crossed cultural barriers, often during a marae experience, realise with a sudden shock of insight that Maori students straddle – usually uncomfortably – two worlds where attitudes, priorities and values clash. They also realise from their *experience* that the school accepts only one version of reality – the Pakeha one. Whether teachers chose to externalise, ignore, or own the problem, they generally do so in an uncomfortable hedgy sort of way. For, despite possible explanations and accusations, the reality still remains, the inequalities are still blatantly obvious, and the life chances of Maori students are still dim.

Some Theory

What (and who) keeps Maori students back? Why do they consistently 'choose' second and third best? In this race (there is, of course, a larger question I cannot tackle here, should there *be* a race?) for positions in a stratified and unequal society, do all New Zealand students compete under the same conditions, or are some carrying burdens which will slow them down, leaving only the 'rubbish jobs' or a 'no vacancy' sign at the end of the run? Why do so many Maori students drop out of the race? Are they just 'dumb', 'unmotivated', or have they made a realistic judgement about their chances and have preferred to go another way rather than suffer the humiliation of arriving last past the post?

The first point of view, which in sociological jargon is referred to as the 'meritocratic myth', is still alive and well in New Zealand. This is despite the multitude of studies which have demonstrated that gender, class and ethnicity weigh heavily on the shoulders of groups of students, disqualifying them from the start from the remotest chance of succeeding. The few individuals from minorities who do make it (we shall see at what cost) only serve to reinforce the meritocratic myth that those who *do* try can finish the race as well.

The constraints in schools are ever present but we do have a degree of autonomy – and therefore of responsibility – to work so that our schools and classrooms lean towards progressive and transformative ends rather than conservative and oppressive ones.

Before reading on, however, it is essential to make an admission to oneself: that in various ways, often unknowingly, *we are all racist*. Such an admission is necessary if we are to keep our defences down in order to let the words of pain in the excerpts following reach us. I am racist insofar as a European I have absorbed attitudes related to the superiority of my culture and filter all other possible cultures through the values that have become second nature to me. This awareness is a sine qua non for personal and systems change. Schools, as cultural institutions, cannot be changed unless people within them want to change and recognise the necessity for change. People, on the other hand, will find it rather difficult to change their own attitudes and behaviour if the structures they work in keep pushing them along old tracks – in our case, monoculturalism.

Their Story in Their Own Voice

Throughout 1986 I carried out observations and interviews with students and teachers in three high schools in a provincial city in the North Island. These schools were chosen on the grounds that each differed from the other in 'climate', ethos and student population. Two of these schools, which I will call Co-Ed and All-Girls' High, were large state schools. All-Girls had a particularly developed understanding of feminist issues as affecting secondary schooling, while the Co-Ed had made important strides in a bicultural direction. All-Boys' College was a small, integrated catholic school, with very few Maori students.

My research field included staffrooms, classrooms, assembly halls, school camps, work exploration sites, and recreation camps. Over 150 lessons were observed, and 50 teachers and 370 students interviewed, some more than once; 87 of the students identified themselves as Maori. The focus of my enquiry was firstly about school-to-work messages given overtly and covertly by teachers and secondly the reception students gave these messages. All excerpts quoted are not of isolated instances but are typical of frequently occurring instances: they represent significant patterns.

How then does it feel to be Maori in the school and classroom? Why do some students have their life chances limited?

1. The Them-vs-Us Syndrome

Maori students' future occupational trajectories are limited by a clash of cultures. Their culture, having both class and ethnic elements and dimensions, is often in direct opposition to the accepted and expected behaviour within Anglo-Saxon schools generally. In attempting to use their cultural resources – often dependent on material levels of existence – Maori students are not competing on an equal footing with others. It is the culture of the Pakeha which imposes definitions and meanings. It is the Pakeha who has cultural power.

The school acknowledges and values middle class and Pakeha attitudes, behaviour and language, ranging from competitiveness to 'politeness' (which could and does include dissimulating in order to please rather than openly admitting anger and frustration) and the use of standard New Zealand English. Such elements, in themselves *relative*, are given an *absolute* and *normative* character. They are 'good', 'normal' and 'common sense' ways of being. They are the referents, and any deviations are not considered to be variations of equal legitimacy, but rather signs of deviance.

By the very fact of being Maori, a student is bombarded day in, day out with negative messages: he/she does not speak right, does not have the right attitude, does not behave well, does not . . does not . . . does not. The only refuge for a Maori student is to find companionship with fellow Maori and other marginals (marginalised!), and vent anger and frustration in self-hate and in sub-cultural, even counter-cultural ways. The only power they have left is to actively create subsets of meanings in opposition to the established culture. It is through this cultural imperialism that schooling provides some of the most damaging experiences – and it is such experiences, and reactions to them which in a very real sense determine futures.

Alice: *Being Maori, we get a lot of racist comments. You might be sitting there and somebody goes: "Oh! Maoris are just thick!" and stuff like that, and so you reply "And you're just a maggot from the pot!" (they laugh). And the way they look at you eh! They give you dirty looks . . . and the way they talk behind your back and you hear them . . .*

Tara: *Yeah . . . If the class were a bit more carefree, we would do better I reckon. We'd do some learning, we'd buckle down. Like swearing . . . a lot of girls were brought up to swear and teachers go really angry. It's part of the language I reckon, so you should be able to speak it! It's the only way to express yourself sometimes, and teachers just think that you're saying it to be cool and to be heard, but you're not. You're really angry and you feel frustrated, and that's the way to express myself!*

The same fifth formers also described their alienation from Pakeha students. They got on well with some, often those who shared a similar socio-economic background.

> *. . . but then you get some who are really toe rags! They have competitions against Maoris flapping rich things in front of your face, and then you pinch it to beat them!*

Against these and other examples of cultural and class difference, it is not surprising that Maori students produce a counter-culture to assert themselves against a school system which they experience as alien and 'Pakeha-fied'. Such reactions might be seen to be 'pathological', 'delinquent' even, but these definitions simply miss the realities of students as lived out in an environment where their own meanings and experiences are neither recognised nor addressed.

On the other hand, it is easy to appreciate how these forms of resistance often work, in the long run, against Maori students' 'best' interest (if we accept that success in a Pakeha system is indeed an ideal goal). This anti-school culture – a way to affirm class and ethnic identity in front of a monolithic, monocultural establishment – contains not only elements of strength and power, but also, at a deeper level, an element of self-damnation. In their rejection of schooling, these students *'in the end, do the work of bringing about the future that others have mapped out for them.'* (Willis, 1977:198).

Tara: *But that gets us nowhere I reckon eh!*

Alice: *While on the streets we'll go: 'Remember school? The laughs we had in our school days, the young days?!'*

The students see themselves as making choices – sticking together for subject options, for instance – in order to resolve dilemmas that arise for them out of the organisation of schooling. As Gaskell (1984:92) points out in another context for other groups of students who consistently 'choose' second best, their *'assumption of responsibility for course choice is important because it leads them to accept responsibility for the restricted options they face later.'*

2. *The Cost is Too High*

It is not just that many Maori students group themselves in opposition to schooling. It is also that they find themselves blocked from considering alternatives, for they have to pay dearly for the qualifications that can eventually be exchanged for a livelihood on the labour market. The way to status jobs and to occupations which offer security, possibility of promotion and some degree of self-fulfilment implies an ordeal which inflicts violence selectively on them. In this case, it demands the compromising of the deepest and most important factors which give their life its uniqueness and meaning, namely their own culture. For many, such a price is too high to pay for whatever the Pakeha system can offer in return. Those who *do* compromise find themselves alienated not only from their culture, but also from their friends; they have to abandon not only group perspectives, but also group membership. Such students, few as they are, cannot form alternative groupings, but find themselves ostracised both from Maori and Pakeha camps. The only seventh form Maori girl at one school spoke about her experience:

Tess: *. . . I'm in a position where I feel like, sort of in between, and I just don't fit anywhere . . . well . . . I don't fit in either way. It's dreadful! I hate school! I feel I don't fit in here, but I try to buck it off, because it's my bursary I'm after. I don't care about the rest, so I just forget about it.*

R.S.: *The way you're talking about your experience reminds me of something I heard . . . that the few Maoris who get to seventh form do so at the cost of their own culture.*

Tess: *That's something dreadful to say, because it's so true! But they you've got to exist, you've got to sacrifice a lot of things to get there. That's a sacrifice you've got to make. Either you go one way or the other.*

3. *Low Expectations*

So far we have seen how monocultural schooling and attitudes inflict hidden injuries on Maori students. As a reaction, such students detach themselves from a damaging system and place themselves in opposition to it and to that which it represents, mainly intellectual work. Such a 'choice' has irreversible repercussions on their future life chances. However, this does not exhaust the account of how Maori students fail at school and in their eventual access to a comfortable livelihood. The pressures of low expectations from significant others, and the subsequent internalisation of such expectations (a self-fulfilling prophecy) reveal other processes at work in schools which further entrench this group of students into dead-end tracks. Maori students gave various accounts of how such low expectations were communicated to them. The following excerpt with a sixth form Maori student is one among many recorded throughout 1986 which illustrates this point:

Rose: *Our teacher was having a talk with us about what we'd like to do when we grow up, and I was the only Maori in my class, and when the teacher asked me I said I wanted to do Management and Accounting, or perhaps Archaelogy . . . And she looked at me as if to say, you know: "You guys don't do that sort of stuff!" And all the class just stared at me and asked "Hey Rose! Do you really want to do that?" And I just got really wild and I said "Up yours!"*

R.S.: *How does that affect you? Do you work less or more?*

Rose: *I want to prove to them that I can be what I want to be . . . but then they just rub it in all the time. I just get so hacked off with it . . . just can't be stuffed . . . I stuff them and enter into my own world.*

Maoris were told in a myriad of ways about which jobs they could aspire to and which were beyond their reach. In a unit on 'Work' with a fourth form class, a Social Studies teacher was helping his students look at different career families, and each student could take a pamphlet about a job he or she was interested in and copy down the necessary information. The following are classroom observation notes, recording an interaction between Pakeha students and Kori, a Maori fourteen year-old:

All the students take more than one pamphlet and read some of the information. One boy takes a pamphlet and tries to give it to Kori, laughing. The pamphlet's title is 'Slaughter Person'. Kori playfully pushes the boy away. Another boy asks Kori: 'What sort of job do you want?' Kori shows the pamphlet he has chosen from the pile. It reads 'Land and Surveying'. The other boy answers: 'But you need two years at Varsity at least to do that! Why don't you join the Army?!' . . . Later on in the period, another boy points another pamphlet at Kori and says: 'You want to be a bus driver?'

The dominant way of thinking among teachers is that individuals freely choose, unhampered, their present and future paths. Excerpts such as these reveal that this liberal ideology misses important realities that are lived everyday by groups of students.

It comes as no surprise that Maori students generally internalise the version of themselves as second class citizens – as 'dumb' and 'thick' – and therefore worthy of second, if not third best at school and elsewhere.

Tara: *I would say that the majority of Maori students are slower than European students.*
(Fifth Former, All Girls' High)

Tess: *If you immediately put yourself at a disadvantage saying 'I can't do it', then you're definitely not going to do it. If Europeans say you can't do it, then they think 'Oh well! I can't do it!' And society is saying that . . . that they can't do it . . . Well, everyone is saying to them 'You can't do it, you can't do it!'*
(Seventh Former, All Girls' High).

While many internalised these imperatives, many could also make connections between the negative feelings they had about themselves and the judgements made about them at school.

Jonathan: *I think that after a whole, when the Maoris, you know, have been kicked in the guts so much, you know, they just stay down, and they see how they do . . . they play cool, they rebel against the system, they tell teachers where to go and all that kind of thing. That's why they give most teachers a hard time, because teachers think they are good for nothing.*
(Fifth Former, Co-Ed High).

4. *Social Injustice*

While the focus here is on education, schools cannot be analysed as institutions removed from the socio-economic context in which they are situated. The wider social structure itself constrains how we perceive, value and act. It is enough in this context to mention three constraints which have a direct influence on Maori students' passage between school and the world of work and non-work.

First, Maori students share with working class students the very real limiting factor of lack of material resources. As one Maori teacher commented:

. . . and all the money that needs to feed them and clothe them and to send them to school . . . it's a battle. Those children might not know anything else, and to reach those standards, those levels, to be in that category of those sort of jobs, it's beyond them.

Secondly, the occupational segregation in the New Zealand labour market ensures that young people are not exposed to role models of Maori people in high status occupations. They thus fail to imagine the possibility of access to such positions. A fourth form Pakeha student said for instance:

> *I've never seen a Maori doctor . . . That would be quite funny actually. I'd crack up laughing because it's so unusual.*

Thirdly, Maori students felt discouraged from investing in schooling because of their knowledge of racial discrimination in hiring practices on the workforces. A Maori teacher said of her students at Co-Ed High's culture group:

> *They don't want to put themselves in the position of attempting to go for a particular position knowing full well that in the long-run they could perhaps be refused, or some reason given for them not being accepted in that kind of job. So, rather than being put in the embarassing position like that they'd rather not set out aiming for anything that is not for them. They'll say: 'Why bother?!'*

Pakeha students who had already experienced hiring practices first hand confirmed that Maori students' fear of discrimination was quite justifiable. One student who worked as a butcher assistant and also as a sprayer said:

> *Say there's a Pakeha, and he goes for a job in a suit and tie, and there's a Maori, also in a suit and tie . . . the pakeha still has got a better chance to get that job, just because he's got a white skin . . . it's racialist.*

Another student explained to me that his father would never employ Maoris because *'it would ruin the reputation of his firm.'* In other words, Pakeha employers can, and as Spoonley (1978) has shown, often do act as 'gatekeepers' denying ethnic 'minorities' access to positions within the labour market.

What's to be done?

Contemporary educationalists are emphasising the political nature of teachers' work. When we organise schools, teaching and classrooms, we are not involved in 'neutral' processes but are actively creating subjectivities and meanings. This article has set out to show how such meaning production in three New Zealand schools adversely affects the life choices and life chances of Maori students. In the larger study from which the analysis was drawn (Sultana, 1987) I have done more justice to the inter- and intra-school differences noted. Co-Ed High's bicultural efforts meant that more Maoris at this school expressed positive feelings about the educational enterprise, there was more evidence of cultural sensitivity, and less of outright racism on the part of Pakeha students – and teachers – than in the other schools observed. Indeed, the fact that individual schools and teachers *can* have a real and positive effect on their students' lives is of paramount importance: we can be optimistic about our work, even if at times the change we would like to bring about seems to take an excruciatingly long time to materialise.

The fact that we can make a difference implies the confrontation of a challenge, that of increasing our awareness of the symbolic violence we – surely unwittingly and unwillingly – inflict on specific groups of students (there are gender and class issues to be considered as well). The result of such violence is that these groups cannot find in schools the refuge from the injustices they experience in the wider social spaces they already inhabit.

While as teachers we cannot possibly change the whole of society – though it has been argued by Giroux (1983) among others that as intellectuals we have an active part to play in the so-called 'public sphere' – we surely can form alliances to ensure that top priority is given to the task of creating systems where all human beings are equally valued and affirmed. The further we extend our perception of the way our assumptions and practices damage some and discriminate in favour of others, the more imminent does the possibility become that schooling moves away from merely reproducing society to making significant inroads into progressive and transformational agendas. In this context, Maori people's calls for systems change – or, failing that, the setting up of separate schooling – can only be justified, for which parent would allow its child to enter into such worlds of pain?

In practical terms, and with reference to life choices and life chances, such schools could develop activities, similar to the feminist undertaking where the campaign 'Girls Can do Anything' urges female students to aim at a higher and wider range of occupations. Career education could abandon its liberal and largely psychological models for sociological ones to engage in a political exposition of occupational 'choice', where elements beyond the individual's control (environment, cultural expectations, social class, gender, ethnicity, and other factors) are seen to exert a major influence on the course of one's entire life, including one's educational and vocational decisions. Career education would thus incorporate a critique of the race/gender/class typing of jobs as well as a critique of the world of work as it is to suggest that more equitable alternative *do* exist. Schools would also practice what they preach. It is high time for Maori people to feature in status positions in schools: if Maori students cannot find role models in society at large, let them at least find them at school! But above all else, it is the rejection of schooling by so many Maori students that has to be addressed. Our, and our institutions', genuine attempts towards biculturalism could see the children of the *tangata whenua* increase their investment in education, their increasing representation in high status positions in society, and more equity in *Aotearoa*.

Notes

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item 13

WILL IT HURT?

set research information for teachers
number one 1989

Teaching in Maori, or Pitjantjatjara

By Richard Benton

NZCER

Jeff Walesby

IN 1990 it may be relatively easy to set up state-funded schools in New Zealand which do not teach in English. Although many countries have parallel school systems teaching in different languages, somehow, in Australia and New Zealand the idea seems strange. What are the facts about going to school in a language which is not the major language? Does it hurt?

'Research shows . . .'

Having a look at the situation in New Zealand (with only a dozen bi-lingual schools in the whole country) it is clear that

1. There is no solid evidence that bilingual education has raised academic achievement much, so far, certainly not enough to have half the children from bilingual schools pass four subjects (including English) in School Certificate in their first year in the 5th form (Year 10).
2. There is strong evidence that in matters like attendance, school tone, and parent involvement, bilingual schooling has had a very positive effect on the life of the schools.
3. There is no evidence that bilingual schooling has had a negative effect on attitudes or achievement in general subjects, including English.
4. There is solid evidence that children in bilingual schools know more Maori than they would have without the school's intervention.

Much the same results will be seen if you look at any Aboriginal or Torres Strait education programme.

Is that enough research evidence? Definitely not. For further help we must look overseas to countries which have similar situations to our own and which have been dealing with them for longer, and have done the necessary research. To do this we must be quite clear about what our own situation really is, and therefore, which overseas experience is truly parallel to ours.

School culture and home culture

In New Zealand Maori children (as a group) do badly at school. In Australia Aboriginal children (as a group) do badly at school. And so do Spanish speaking children in California and Finnish children in Sweden. Lots of proposals have been made about how to deal with these problems.

At one end of the scale are those who say, in effect, 'throw money at the problem' – better resources, better teaching, more teachers and better trained, smaller classes... more and improved versions of what we are doing now will cure the problem.

At the other end of the scale are those who say there is no **educational** problem – it is a European school system designed for Europeans, and the only thing to do is to have a **political** solution or revolution. This will give Maori and Aboriginal people power over their own lives, and they will set up, if they see it as necessary, an education system that suits their culture. And don't be surprised if it has no school rooms, blackboards, chalk, teachers, principals, hours, classes, all those trappings of the Western Imperialist culture . . .

Somewhere between these two, in New Zealand, is the Matawaia Declaration, which asks for a separate Maori Education Authority. The changes to the administration of all New Zealand Schools due in 1989 make such a system unlikely. But the changes do allow for separate Maori schools to be set up. These schools, and perhaps some already existing schools, may want to become bilingual, or to replace English altogether by Maori. Should they do that?

Two Massey University scholars, Roy Nash and Richard Harker, say that Maori control of Maori schools is desirable. But they have pointed out that the greater security which Maori children may feel in an environment more in harmony with their family and community culture is only an advantage if it is followed by a process which will enable

them to learn 'what has to be learned in the primary school: literacy, numeracy and an understanding of the function of logical deductive argument.'

Children bring a culture with them to school; French culture in France, Thai culture in Thailand, Maori culture in Ruatahuna, Pitjantjatjara culture in South Australia. But a different sort of culture is needed to do well at school – a mixture of inquisitiveness and doing what you are told, of being intellectually adventuresome and physically obedient, mastering reading, writing and arithmetic and how to learn.

This school culture, in the end, is much more important than your ethnic culture as far as academic success is concerned – after all you can be an academic success in Paris, Moscow or Bangkok, using French, Russian or Thai, just as you can be a success in London, New York, or Sydney, using English. Maori boarding schools have been quite successful, but not by 'progressive' teaching. They have tended to be old-fashioned in their teaching style, but they have managed to drum into the pupils how to function in school. Wise Maori educators have intuitively recognized the trans-ethnic (and trans-national) nature of the school culture: it's much more than just 'being like a Pakeha'.

So the problem, politics aside, can be recognised as: how do you provide, in a school, the *necessary* learning, which in many ways means acquiring the *necessary* culture of the school, without undermining or devaluing the particular national or ethnic culture in which students have their roots.

For some New Zealand children the most effective entry into the academic culture includes doing their learning in the Maori language. These are children from Maori speaking homes and Kohanga Reo, Maori speaking pre-schools. Similarly, for some Australian children the most effective approach to school learning may involve using the Pitjantjatjara language. All languages have the potential to develop intellectual skills. For children whose families strongly identify themselves as being Maori, the value of Maori is such that it cannot be replaced in the classroom by English alone. Through Maori, they can achieve the necessary school culture without alienating themselves from their fundamental culture. The same applies to many groups of Aborigines.

So much for the clouds. What can we expect on the ground? Recent psychological and educational research bearing on bilingualism has been analysed and discussed in a number of excellent books in recent years, among them Kenji Hakuta's *Mirror of Language*, and Tove Skutnabb-Kangas's *Bilingualism or Not?* These are highly recommended to teachers, parents and policy makers seriously interested in this topic.

Immersion

Planning to revitalise a language through the schools is common and has been through various fashions. One fashion is to adopt 'immersion' programmes, where, in theory at least, only the target language is used for the first few years of schooling. Some newer **Kaupapa Maori** schools (Maori Organised schools) intend to extend this pattern through all levels (with English taught as a subject).

At first sight there are good overseas models to look at to see if this is a sensible thing to do. The results of French immersion programmes for English-speaking children in Canada, have generally been very positive, with no loss in English language skills and no loss of competence in the ordinary school subjects. And, the children have developed a high level of communicative and academic competence in French. However, many of these successful Canadian schemes (although not all) have involved children from family backgrounds where academic success would be expected in almost any circumstances. Also, two major world languages are involved, with all the written and aural resources this implies. Furthermore, the teachers are native-speaking professionals.

In New Zealand, the context for Maori immersion is not nearly so favourable. A similar situation exists in Australia. There is an acute shortage of native-speaking teachers for a start: the Spolsky report in New Zealand documents this. Secondly, immersion teachers do not have resources remotely comparable to those which teachers teaching in English have at their disposal. This certainly puts them at a disadvantage.

On the other hand, an English-only infant programme (English submersion) puts any children coming from kohanga reo whose first and strongest language is Maori at an even greater risk. The same risk is there for Aboriginal children who speak their own language at home.

Social Consequences

The standard approach to schooling (education exclusively through the majority language) is best described as **submersion** for minority-language speakers, and usually results in monolingualism for all. This is certainly well-supported by New Zealand evidence.

Monolingual education in a minority language, such as Maori in New Zealand, Pitjantjatjara in South Australia, is not so commonly practised, and is complicated in its effects. There are three possibilities.

(a) The situation of political **coercion**, such as in South Africa with the majority (Zulus etc.,) being taught in Afrikaans, adds to the social injustice and turmoil of the country.

(b) The situation of **isolation** such as the Turks in Germany. They have schools using their own language but it is feared that this may result in an apartheid-like situation, where the minority language speakers are isolated from participation in the political and social life of the larger community.

(c) The situation of **preservation** such as the Swedish minority in Finland have, where a 'language shelter' approach is taken, the home language is supported and the children also become proficient in the majority language. Here the result is quite the opposite of apartheid. The minority language is a bonus for the children, not a block to employment or political participation.

For Maori-speaking children, the immersion programmes do offer such a 'language shelter', and bilingual programmes can do the same job. Using two languages at school on equal terms could offer a safer middle road between the submersion and immersion options. In fact, the successful immersion programmes themselves are not 'all or nothing' but as Colin Baker points out,

(1) they are voluntary;
(2) the children in any given class have similar degrees of ability in the second (immersion) language;
(3) the home language (and culture) is respected;
(4) teachers are committed to immersion education, but are not speakers of just one language themselves – they have a high degree of bilingual competence, and have a pluralistic outlook;
(5) a flexible and well thought out methodology is implemented; and
(6) research goes, hand-in-hand with innovation.

But what effects do such programmes have on the children who speak only English at home – and this must be the majority of Maori children today? And what effects do running these programmes have on any European children attending? And what about the social effects of having these

very different schools in the midst of our towns and suburbs?

If it is Maori children alone who go to separate immersion or bilingual schools, and benefit from them, this makes many people fearful. They feel it is divisive and that such arrangements could foster or intensify racial strife. This attitude has been seen overseas.

> It has been contended, furthermore, that in segregated ('single medium') schools, or even in segregated classes of the same ('parallel-medium') schools, intolerant attitudes toward the other language and its speakers are fostered, and thereby the sound civic life of a bilingual country is endangered. (Uriel Weinreich, *Languages in Contact*)

In New Zealand there is a fear of being different, of people and actions that are different, and extreme pressure to conform; it permeates New Zealand social life. It will not disappear if immersion or bilingual programmes are suppressed. The main danger in such programmes, if they are run within larger conventional schools, is not so much that intolerant attitudes will be fostered, but that what is done in the classroom will be undone in the playground, by taking away opportunities for children to use Maori naturally in social situations. A good way around this is to have a very strong Maori-language programme in the rest of the school. Those children being educated mainly in English could then be encouraged to extend their knowledge of Maori by using it with the immersion children, informally, as often as possible.

Cognitive Consequences

It is very hard to draw firm conclusions from overseas evidence (and we have insufficient local evidence) about the likely effects of using Maori, or any Aboriginal language, as a medium of instruction, either alone or in addition to English, in a programme designed to enable children to participate on equal terms in the trans-national academic culture to which the academic side of schooling provides the key. Overseas studies are mainly concerned with children who have the minority language as their first or strongest language, for example the Mexican-Americans or Vietnamese in the USA. Other studies are of children who are learning a minority language which is a world language (e.g., French in Canada), or of children who speak the ethnic language, even though it is not as widely spoken as the other language (e.g., Irish belongs to Ireland although English is the main language spoken; similarly Welsh and Basque).

For children with a knowledge of the minority language, Maori in New Zealand, Pitjantjatjara in South Australia, Tibetian in India, Welsh in Wales, or French in Anglophone Canada, teaching in those languages seems to have considerable advantages over a submersion approach, even when all school tests are in the majority or official language. A very careful appraisal of empirical research from several countries by Zappert and Cruz, published in 1977, for example, found quite clear evidence that in subject matter tests in the official language, minority-language speakers who had been taught bilingually did better than those taught only through the official language (English in the U.S., and Spanish in Mexico).

In tests of cognitive functioning, the evidence favoured bilingual education for both monolinguals and bilinguals; no group of bilingually educated children was at a disadvantage compared with monolingually educated children in any study which met their criteria for scientific adequacy. Subsequent research, for example, studies mentioned in Kenji Hakuta's book *Mirror of Language*, points in the same direction.

A much stronger claim is made for speakers of majority languages in developed countries by Tove Skutnabb-Kangas:

> We could, with good scientific backing, say: not a single child in West Germany, France, Great Britain, Holland, Sweden, Denmark and Norway needs any instruction in school through the medium respectively of German, French, English, Dutch, Swedish, Danish or Norwegian, during the first six years of education. (*Bilingualism or Not*, p. 130)

That is to say, a switch in New Zealand or Australia to French or Indonesian or Maori or Pitjantjatjara as the classroom language (together, of course, with a corresponding transformation of the teaching force and materials), following much the same curriculum as at present, and with little change in the linguistic environment outside the school, would probably result in much the same levels and distribution of knowledge and achievement by the time children entered secondary school as at present, with no lowering of competence in English, and with everyone able to function bilingually.

This is more or less what started to happen in Ireland in the 1940s and 50s; it led to a great increase in bilingualism, but it did not, unfortunately, do much to encourage people to speak Irish at home.

The chart summarizes the cognitive consequences of various kinds of bilingualism, whether acquired through the school or by mixing in a bilingual society. Positive effects follow when there is an opportunity (or a requirement) to function at a high level in both the languages. There is little effect one way or the other when a person has one language well developed and the other very much a second language (as is the case with English and Maori respectively for many New Zealand children at present). The dangerous state is when higher level functioning is not developed in either language, a state sometimes called 'semi-lingualism'.

Cognitive Effects of Bilingualism

Type of bilingualism	*Cognitive effect*	*Threshold level of bilingual competence*
balanced high levels in both languages	positive	higher level
one language dominant the other well understood	neither positive nor negative	intermediate
		lower level
semilingual, low levels in both languages (may be dominant or balanced)	negative	

(Adapted from *Bilingualism or Not*, p. 223)

An **isolationist** policy, where a minority language is used to cut off contact with the majority language, carries with it risks of negative consequences. This will definitely be seen in school achievement, but will not effect the level of thinking (cognition). However, an **assimilationist** policy which deliberately or unwittingly suppresses the minority language has negative effects in both achievement and cognitive growth. Thus the effects on children from kohanga reo Maori-only pre-schools when they move to classrooms where only English is used are likely to be much more adverse than immersion programmes in Maori. And that

holds for both Maori-speaking or English-speaking children. A 'transitional' bilingual programme, designed to phase Maori out as soon as possible as a language for teaching and learning, would also be likely to have a negative impact.

The greatest danger to cognitive development in a bilingual context is when what is done at school or at home is 'subtractive' in its effects:

> We must remember that a large part of children's socialization before school age will be in terms of their mother tongue. It is in their mother tongue that their deepest emotional security is anchored, and this sense of security is vitally what makes it possible for them to respond positively to new experiences. The new positive connotations that the children of course should get in learning denotative meanings in the new language, should preferably be connected where the use of the new language is a natural and functional thing, that is, with native speakers of it. If the parents also switch to the new language in order to create positive connotations in it, and in order, as they think, to help their children learn it better, then they risk moving to a 'subtractive' language learning situation. . . Bilingualism will in this case become a negative transitional phase rather than a source of personal enrichment. Most of the unfortunate consequences of bilingualism spring from the subtractive kind.
> (*Bilingualism or Not*, pp. 259-60)

The kohanga reo approach, of using only Maori in the kohanga, but leaving the home situation as it is, when both parents are native speakers of English, is thus psychologically very sound. It provides a context and security for both a child's languages. Difficulties are likely to result when the primary school cannot build effectively on the work of the kohanga, especially for children who have developed greater strength in Maori than they have in English; they are in a kind of double subtractive jeopardy, having travelled from English to Maori, only to have to virtually abandon Maori in favour of English again after a few weeks at school.

Semilingualism

'Semilingualism' is not a popular topic with bilingual educators and advocates of bilingual education. It is the state of not knowing any language properly. However, it exists and will not vanish simply because we do not like to talk about it.

Carl Dodson, who pioneered the development of bilingual methodology in the Welsh language revival, has stressed the importance of going from the known to the unknown in language acquisition and language teaching, making use of the strengths in the learner's first language to build proficiency in the second. There is a clear message here for the development of Maori/English and Aboriginal/English bilingualism.

> It should now be quite clear that to suppress one of the languages of a developing bilingual living in a bilingual environment, no matter for what reason the language is suppressed, does not and cannot benefit his proficiency in the other. . . *failure in one language can lead to loss of confidence in the use of the other*, with obvious consequences. (*Bilingual Development and Education*, p. 7, emphasis added.)

If through the school's Maori programme the children become proficient in cognitive/academic language, whether by immersion or not, this proficiency will flow over into their English. This is a two-way process and holds for any two languages. But cognitive/academic language will not develop in a vacuum; all the linguistic resources which a child brings to the classroom need to be activated if their potential is to be realized; suppressing or ignoring these resources will have a cumulatively damaging effect. This suppression can take many forms, including an emphasis on the home culture at the expense of numeracy, literacy and 'analytic competence', including logical deductive ways of thinking. It is a danger of which all teachers, running immersion Maori or Aboriginal programmes, bilingual programmes, and submersion English classes, must be aware.

Literacy

Literacy plays a very important part in developing cognitive/academic proficiency. There is an interdependence between the languages which a child uses; proficiency developed through one will also manifest itself through the other. However, motivation and adequate exposure to both languages is an essential ingredient here. The child's proficiency in the minority language may actually deteriorate, if its status is manifestly low, and especially if there is 'lack of exposure to literate uses' of this language.

This is something which curriculum planners for Maori-medium schooling must be very conscious of: school learning is highly dependent on both writing *and* talk for its development. 'Language develops through its purposeful use; . . . learning often occurs through talking and writing; and . . . language contributes to cognitive growth.' (David Corson, *Oral language across the curriculum*, p. 15). There is a need for plenty of talking, and for this talk in the classroom be 'experience based', extending children's powers to think and understand. An artificial approach to language use in the classroom, especially in the junior school, is likely to result in 'gagged children', equipped with 'a form of language that is both alien to them and below their potential' (p. 49). Reading, too, is very much a part of a soundly based curriculum, whether the medium be English or Maori, and will pave the way for talk to progress from simpler communicative functions of a social nature, to the point where it can play its part in developing 'analytic competence' – the ability to think and to express and elaborate those thoughts in words which others also understand. This is the quality on which success within any education system ultimately depends.

Power relationships

There is one last dimension of semilingualism which must be mentioned. This is its role in perpetuating unequal power relationships:

> One of the main goals of schools is to function as a selective instrument. Semilingualism, produced by the institutional organization of the minority child's environment, among others the educational system, which operates on the majority terms to ensure the continuation of the present power relationships and the division of labour, sees to it that the minority children are neatly sorted out from the educational system and the decision making positions at an early stage. But the one that under present circumstances is blamed for the poor educational achievement and the dropping out from the system, is not the system, but every individual child... attempts are made to *change the child* in such a way that it adapts to the social situation in a majority language environment in the school..., instead of *changing the situations, the system* to adapt to and start from the communicative experiences and the command of the language of communication that the minority child possesses...
> ('Semilingualism and Middle-class Bias', pp. 183-184)

That passage is from a paper about the linguistic fate of Finnish migrant children in Sweden. The situation it describes is uncomfortably close to one at the other end of

the earth, where in previous generations Aboriginal languages and Maori were often forgotten more quickly than English was acquired, and where the language that children bring to school is still frequently not accepted or not recognized. Maori control of Maori education in New Zealand could be an important factor in removing this obstacle to cognitive development.

Education in Maori, or Pitjantjatjara, or Not?

1. The evidence from overseas studies indicates that, for children from kohanga reo, an all-English learning environment at school will do more harm than good. So children who are already bilingual to some degree should certainly be helped to stay that way.
2. A well thought out immersion programme in Maori or an Aboriginal language will not do children who arrive speaking only English any harm, but the evidence indicates that the total exclusion of English from the learning environment for such children, that is, a submersion approach, will probably slow down rather than assist their becoming competent in their second language (in this case, Maori, Pitjantjatjara, or whatever), and could, if rigorously insisted upon, affect adversely their educational achievement and, in some cases, their development of competence in English as well.
3. Cognitive advantages accrue from bi-lingual teaching only when both languages are used to develop cognitive/academic linguistic ability. A superficial acquaintance with Maori, even if this enables a child to interact socially with fluency and ease in everyday situations, will remain simply a social advantage, and not a cognitive one, if that child is not enabled to read, write, calculate and think in Maori as well.
4. There is wisdom in providing instruction in the native language for a considerable length of time:

   > . . . children are not the instantaneous second-language learners painted in our folklore, and ... it may take them even longer to learn the kinds of language necessary to perform well in school (*Mirror of Language*, p.225)

The conclusion from these points is that it would be most wise to set in place as a policy some kind of 'language shelter' approach for those children for whom Maori or an Aboriginal language is the first language. Providing educationally relevant experiences mainly through Maori (or Pitjantjatjara . . .) initially, can be justified on educational and psychological grounds, as well as for ideological and social considerations.

For children who are more comfortable in English, a bilingual approach (which is also a feature of successful immersion programmes overseas), enabling them to build up their command of Maori or an Aboriginal language without having to abandon English for extended periods of time, even in the classroom, would be a better way to start in school than 'total immersion' in another language milieu, however ideologically appealing the latter might be. The Maori or Aboriginal language content in the learning environment can then increase as the children are able to handle it and benefit from it.

The Way Ahead

Though couched in New Zealand terms, the following has relevance to the Australian situation as well.

The way forward for those who wish to remain Maori, or to return to their Maori heritage, is clear. Effective Maori control of the institutions and curriculum through which Maori children are educated is imperative, and the use of the Maori language as an *educational medium* equally vital. It is only the **means** by which these goals are accomplished which remains open to question. And it must be remembered also that on the language side, success will only have been achieved when there are more children being brought up as native speakers of Maori within their families than there are now native speakers journeying beyond Te Rerenga Wairua, to their last resting place. This cannot be done overnight, and it cannot be done at all without teachers, advisory services, teacher education, publications, and other resources. Maori people will therefore need to monitor the education system closely, and make sure that they are adequately represented wherever decisions and changes are being made.

The first task will be to take full advantage of the possibilities of the new system to ensure that there are very efficient and effective Education Service Centres and bilingual and other kaupapa Maori schools to provide an equally effective and efficient education system which serves all the educational needs of Maori people. This will mean that partnership must be extended to the national level, so that Maori interests have a say in the planning of the core curriculum as well as the optional local aspects of the curriculum, and that system-wide institutions such as teachers colleges are able to meet the needs of Maori schools for capable Maori-speaking teachers and resources for education through the Maori language.

It is not just the administration of Maori education which must change. There is little point in changing the outward appearance of administrative arrangements if everything else remains more or less the same. Parents and boards of trustees will have to beware of this. Our present New Zealand system was supposed, when it was put in place by Parliament in 1870, to be completely localized, with a bare minimum of central control. It did not stay that way, and there is no guarantee that the new arrangements will turn out any differently, given the very wide powers which are retained at the centre, and the natural human tendency to let things slide after the novelty wears off.

The substance of the Matawaia Declaration's call for a Maori controlled Maori Education Authority could be implemented. Education through the medium of Maori is essential for Maori-speaking children, and highly desirable for other children, provided that whatever other linguistic knowledge they have is respected and built on, and that education, not just language learning, remains at the heart of what goes on in school.

Notes

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set research information for teachers
number one 1989

Teach Learning Strategies

By Helga Rowe

ACER

LEARNING ONLY TESTABLE FACTS will not be enough for survival. Learning fact-finding skills will not be enough. Independent thinking, being able to make good decisions, having clear values and a store of *useful* knowledge are needed.

So teachers want to help students develop effective methods for handling the overwhelming flow of information surrounding them. This means adapting your thinking in a flexible manner. Adapting and regulating your cognitive processes is the key to independent and life-long learning.

Independent learning does not consist simply of having available a collection of strategies. You must be convinced that the strategies are important, effective, efficient, worth some extra effort, and will bring success; these convictions motivate you to use the strategies without prompting or help. And confidence in your own abilities, independence in your cognitive processing come with success. Learn the strategies, be motivated to use them, get success from using them, this is the aim.

General Issues

What are learning strategies?

Although researchers and practitioners can agree on the importance and usefulness of learning strategies, a precise definition is lacking.

In my research I have adopted a rather broad definition distinguishing

- the more global and complex strategies (e.g., elaboration, comprehension, monitoring, evaluation and active reading);
- more basic strategies, especially those assisting memory (e.g., association, rehearsal and imagery);
- motivational components (these help attention, concentration and perseverance).

Transfer and generalisability

There is a long and continuing controversy on whether you can learn to use *general* cognitive strategies or whether you must learn *specific* knowledge-based strategies.

There is evidence that learning strategies can be taught and then will be useful in many situations. For example, courses designed to enhance study skills have long been successful. We are looking for thinking that is not bound to one topic.

Learning with awareness

A third important issue concerning the teaching of learning strategies is learning with awareness. Most learning strategies programmes attempt to make students aware of the various strategies available to them. There are two aspects: (1) knowledge about cognition, and (2) regulation of cognition. Most learning strategies programmes teach both of these aspects.

You need to know the facts, your own strengths and tricks of the trade. Knowledge about cognition includes knowledge about what the task will demand, about human limitations and personal characteristics, as well as the situational and strategy variables that influence performance. You need to know how the characteristics of the task, and the nature of materials, will influence your learning. You also need knowledge about your own abilities and characteristics of thinking and learning (e.g., knowing you are best at recognition tasks such as multiple choice) so that you can adapt your learning to the task's demands. Finally, knowledge about various cognitive strategies or activities should improve your learning. Most strategy training programmes teach various *memory* strategies (e.g., rehearsal, imagery, elaboration) and other strategies for *attention, problem solving* and *comprehension*.

Motivation

Training programmes cannot ignore motivational dynamics. Programmes will be more effective if a motivational component is included. Changing students personal theories of intelligence, or motivation should lead to more active learners who are willing to use the cognitive strategies taught in a training programme.

Self knowledge and self regulation

Learning strategies must be acquired through:
(1) the development of knowledge about your cognitive abilities and skills, including an awareness of your own resources and capabilities relative to many cognitive demands and situations, and
(2) the development of the ability to consciously regulate cognition by using self-regulatory cognitive behaviour such as checking, evaluating, monitoring, planning, testing and changing strategies (in keeping with the changing demands of the task). With continued use monitoring is automatic. The regulatory activities, however, remain a conscious experience and are used when difficulties are perceived.

Knowledge about cognition is made up of a relatively stable pool of information and skill which has developed as a result of age, education and experience more generally. Regulation of cognition through monitoring and control is less stable since it depends on your expertise and on the task and situation. However, in simple problem-solving tasks even young children learn to monitor their cognitive activities.

Research has shown that strategies develop through the learner becoming aware of how variables interact to influence the outcomes of thinking. My own work has shown that this interaction is highly complex and multi-determined, involving the person, the task, the situation and the cognitive strategies available.

The Person

What you bring to the task is not just your own characteristics but also includes what you know about your own and other people's cognitive processing. For example, you may know the limitations of your short-term memory capacity, how you use stored knowledge, how much rehearsal or practice you need, and how many strategies you have available.

The Task

Knowing the task involves being aware of information which becomes available while performing the task. We learn from experience that different types of tasks impose different kinds of information processing demands. Knowing what different tasks demand enables you to take account of them and to incorporate them into your subsequent plans and operations.

Putting them together

When you know of the interactions likely among person, task, situation and strategy you may recognize the superiority or inferiority of certain cognitive strategies.

Instruction

1. To promote awareness of learning processes and strategies:

1.1 Suggest that students keep a daily 'learning diary'

In this diary students can keep a daily record of their reflections on and reactions to academic activity. It helps their thinking about thinking. It focusses on how tasks were (or were not) accomplished. Such 'write-thinking' experiences, help identify points of confusion, help formulate questions for further clarification or investigation, and help pupils recognise important insights. By shifting the focus from the products of cognitive activity (the 'answers') to the processes taking place during learning, thinking, etc., teachers can help students to become active monitors of their own learning.

1.2 Demonstrate and discuss appropriate strategies

Teachers can help significantly by modeling. By 'thinking aloud' teachers can demonstrate their own thinking strategies. This is especially effective when tackling difficult tasks and unfamiliar learning. For example, during reading comprehension the teacher might discuss his or her own comprehension difficulties and then model ways of getting to the meaning.

Teachers can also encourage students to share their thinking and learning processes with their peers. After an assignment has been given, class discussion can focus on processes such as estimating task difficulty, identifying goals, choosing strategies, identifying a sequence of steps and planning for evaluation. Hands-on practice and discussions of this nature stress the experience of cognitive activity, i.e., the cognitive processes, rather than the outcomes of such activity, and provide instructive feedback to learners and evaluative feedback to teachers.

1.3 Encourage self-reports

Many teachers and curriculum developers have pointed out how important it is to find out what children think about a topic before teaching of the topic begins. What seems to have been less emphasized is the importance of knowing how children think so that teaching method and content can be adapted to cognitive needs.

Finding out what students really believe is not at all easy. Children spend a considerable portion of their childhood learning how to please their elders, and they are adept at fastening on small cues as to what is expected of them. Adults are prone to ask leading questions, to reject 'wrong' answers by raising an eyebrow or rephrasing the question, and so inadvertently reinforce a particular type of answer. Effective probing of students' real ideas and strategies of thinking requires a conscious value-free approach which it is not at all easy to maintain. However, it must be maintained if we are to obtain the information we need.

I have found that it is helpful to state quite openly and clearly what the intention of the exercise is, what I am hoping to achieve. For example, I say:

> Today we are going to talk about how we think when we are trying to solve a problem. Before we can discuss such a subject, we must make sure that we are all talking about the same thing. What do you mean when you talk about 'thinking' and 'how I think'?

This works with both small groups or in individual interviews.

The problem is how to find out what another person knows *and* how he or she processes information. It is the problem of how to make what are essentially covert processes overt. Direct and indirect methods can be used. To get at processes, ask students to report on the strategies they are employing whilst solving or learning. Self-reports, such as questionnaires, interviews and verbal reports, obtained by the thinking-aloud method, are the major *direct* method for assessing metacognitive knowledge and skills. *Indirect* methods include observing spontaneous private verbalisations, the use of rating scales, performance and behaviour analyses, and task analyses.

2. To facilitate conscious monitoring:

2.1 Provide opportunities for feedback

Students may not be aware that they have not understood. Young children often have to start out to follow a set of instructions before they realize that certain important information is missing. Receiving this kind of natural feedback helps develop criteria for guiding learning and comprehension activities.

Teachers can provide students with opportunities to apply knowledge so that they will receive feedback about their understanding. For example, students can take turns in adopting the role of teacher, and teach skills and strategies to others from personal experience.

2.2 Provide instruction in self-questioning techniques

Many students rush through assignments, with the aim 'to get it done as quickly as possible. Often, the products of this rush are returned to the students with remarks such as 'correct' or 'do it again'. Teachers can stimulate more active involvement with the task by training students in

self-questioning. For some students, a suggestion to ask themselves, 'What am I asked to do here?' or 'Do I understand this?' may be all that is needed. Other students need more specific guidance, such as 'How else might you have gone about this task?'

Students will profit from asking themselves questions after they have read the instructions; 'Do I know what to do?' 'Can I restate the directions?' 'Can I anticipate or avoid later problems?' These make them aware of the current state of their learning.

Discussions and practice of remedial (fix-up) strategies may reduce the number of times the teachers must repeat themselves. Examples include re-reading, looking back for examples of similar assignments, studying the examples provided and going back to assignment instructions for clues.

2.3 Teach students to summarise material

To guarantee successful learning, students need to be able to analyse the state of their own understanding and determine what steps must be taken. They should check their understanding of information to be learnt by summarising it. This activity should be viewed as a type of self-testing procedure. It can be used whenever information must be processed; this includes: summarising sets of instructions, preparing for examinations, preparing before participating in an unfamiliar social situation.

2.4 Teach students to rate their comprehension

To learn you must be able to monitor your understanding and apply corrective procedures when you have not understood. Teachers can give varying amounts, types and levels of informative material and then ask the students to rate their understanding of it (e.g., 'I understand well', 'I sort of understand', 'I don't understand').

In addition students must be encouraged to attempt to identify the reason (if one exists) for their difficulty to understand. It might be an unfamiliar area; a new word in the text; or the unavailability of a rule. Difficulties may be caused by the manner in which the material was presented and/or organised. Once the source of the problem has been identified, the teacher can guide students to consider remedial activities.

3. To encourage a deliberate and systematic approach:

3.1 Adopt a suitable model of learning

For example, the following four-component model of learning is a basis which students can use when planning their approach to many tasks.

When exploring learning situations, four basic factors must be considered:

- the nature of the material to be learnt, or problem to be solved;
- the learner's current skills and knowledge relevant to the task demands;
- the strategies required from the student;
- the criterion tasks or tests used to evaluate the degree of learning or the correctness of the solution.

All four factors interact and influence learning, understanding and remembering. Teachers can assist decisions about how to handle new learning by directing their pupils to consider these four factors. One possible approach would be to formulate questions students can ask for each factor, such as

'What am I supposed to do?'
'What do I already know about this subject'
'How could I start and how can I proceed?' and
'How will I be evaluated?'

Answers to these questions will lead to a plan for handling the task.

3.2 Adopt a suitable model for study activity

There are many descriptions of how to study.

Before work on the assignment, identify the purposes and reasons for doing it. Appropriate activities include: browsing, skimming or surveying the material, and posing questions that might be answered later.

During the task the learning should self-question: 'Does this make sense?', 'Did I do that correctly?', 'What would happen if I did it another way?', 'What other ways can this task be accomplished?' By referring back to the original purposes and goals, the learner can maintain a focus and avoid drifting off at tangents.

If the task involves creating something to be shared with others, an additional question needs to be asked: 'Will the audience, for whom this is designed, be able to understand what has been done, processes as well as product?'

After the task has been completed the student should check and review: 'Did I accomplish my purpose?'. 'If not, where did I go wrong?', 'If yes, which strategies were the most useful?', 'What have I learnt from this experience?', 'Are there new or related areas I would like to look into?'

Asking themselves these types of questions will increase students' self-control, process and strategy awareness, executive control, and independence in learning.

Six Components of Effective Strategy Instruction

1. Strategy instruction and strategy modeling

Teachers must care about the processes involved in reading, learning, problem solving, etc., and must be willing to devote instructional time to them.

The products of learning (content knowledge in specific subject areas) currently command the larger share of teacher attention and processes take a back seat. The origins of the word strategy in the Greek 'strategia', (the organization of military actions) remind us that employment of a strategy involves not only reaching a goal, but reaching it in some optimal way. The way the goal is reached must be analysed and presented explicitly to learners. Teachers can render the covert processes and strategies in overt form by thinking aloud while completing a task. Just modeling without verbalization is insufficient, because the strategic activity is largely unobservable, and the product, not the process, again receives the greater emphasis.

There are at least two different styles of modeling. One presents a sophisticated strategy, the teacher first establishing why the strategy is useful, then thinking aloud about how the strategy is applied. Then follows discussion of how it is evaluated, and finally discussion of when and where the strategy is most useful. The teacher should provide more then one instance of the strategy and on more than one occasion. Students practice using the strategy immediately after the teacher's modeling and thinking aloud.

A second style of teacher modeling contrasts a sophisticated form and a very immature form of strategy. Both are presented by means of thinking aloud, and their relative effectiveness is assessed by the class. The immature form could be a mixture of ineffective activities actually used by students in the class. These can be discovered either from reports by students or from observations by the teacher. Again students attempt to use the sophisticated strategy immediately.

2. Task analyses

Teachers must do task analyses of strategies to be taught.

Teachers cannot 'think aloud' without first having considered in some detail how a particular strategy is best applied and also about how it is applied in immature form. Interviews, observation and introspection will help. So will the research literature, or asking colleagues to think aloud about their own expert strategic activity.

Often a detailed sequence of strategic operations is needed if it is to be used in instruction. The teacher can begin by breaking down a strategy into global steps. Next, each global step is broken down into a sequence of substeps. At this point, you can test the adequacy of the description by asking a colleague to perform the task doing only what he or she is explicitly told.

In the classroom such detailed descriptions should include some self-disclosure or self-evaluation, for example, the comment 'I seem to be getting rid of a lot of unimportant information'. Also presented along with the problem-solving procedures can be coping strategies such as, 'I can't remember where the instructions said something about weight, so I keep looking for the word weight.'

Coping strategies are particularly important. If students realise that strategic behaviour does not ensure trouble-free speedy solutions in all situations, they are less likely to give up when their first effort does not lead to success.

3. Generalizing strategy applications

Teachers must present strategies as applicable to tasks in more than one domain.

Low ability students and bright students from non-western cultures tend to learn exactly what the teacher says. In fact, all students often learn that strategy A works only for task B in class C because they are not alerted to the fact that the strategy might have wider applications. Teachers should present strategies in many contexts and present the variations on a particular strategic theme explicitly.

4. Duration of instruction

Teachers must teach strategies over an entire year, not just as a single lesson or unit.

Getting subject matter to the children takes up most of the instructional energy in schools. Non-subject matter such as learning how to learn is treated as an 'academic frill' and relegated to leftover time before recess, or just after fire drill, or assigned to a non-compulsory segment. If strategy instruction is delivered and received as isolated material, unrelated to subject matter and to other important learning, it will be not be absorbed. Strategy instruction needs to be an integral part of already accepted instructional objectives. Once the teacher allows strategic instruction to permeate his or her curriculum, this is really quite easy.

5. Guided practice

Teachers must provide students with opportunities to practice strategies they have been taught.

Cognitive processing capacity is not limitless. For example, proficient reading comprehension depends on rapid, accurate, automatic decoding and processing capacities are taxed until practice produces efficient decoding skills releasing cognitive resources (from code breaking) to comprehension. When decoding is automatic, attention may be focussed on deriving meaning, this theory argues.

Thus it is useful to move from being constantly aware of strategic activities to near automatic states. Again, practice is the answer. Teachers must allocate school time for such practice, it must be guided, i.e., interspersed with more direct instruction and, above all, there must be feedback.

Students who do not make strategies their own, and use them routinely, will fail to use them in the rushed activity flow of the classroom.

6. Students teaching students about strategies

Teachers should be prepared to let students teach other how best to go about reading, problem solving, learning and other cognitive processes.

One of the benefits of the classroom in which cognitive processes are examined is that students can tell teachers and other students about special modifications of trained routines. Discussions about strategy options and modifications give teachers information about instructional efficiency and about the depth of strategy understanding of individual students. Further direct instruction can be planned on the basis of these two kinds of information, namely instructional efficiency and the depth of understanding gained.

Peer tutoring can yield three important benefits. (1) Children become motivated to learn about strategies so that they can teach them to someone else. (2) The tutors' strategic repertoires are reinforced by the planning they do with materials to be used for tutoring peers or younger children. (3) Adult instructors and students can learn that a student is not a uniformly 'poor' or 'good' strategy user.

Conclusion

Learning and thinking strategies can be viewed as critical factors in formal as well as in informal education. Many students eventually figure out how to learn, as a result of repeated exposure to tasks that require strategic planning. A large number of individuals, however, fail to do so. One reason for this failure may be that we fail to make task demands, and the processes by which these demands can be met, explicit.

The only way classrooms will become arenas for extensive strategy instruction is for strategy instruction to be totally intertwined with subject content instruction. To fail to teach students strategies from which they could benefit is to fail the students. To neglect to show them ways of reaching cognitive goals in optimal ways is unpardonable. To teach arithmetic facts, science principles, literature, a foreign language, or historical facts without teaching how you can learn more about them (or about other content) is to risk that our students will not become independent learners. To put it bluntly, this would be entirely unacceptable educational practice.

Notes

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Helga Rowe's work showing the highly complex interaction of the person, the task, the situation, and the strategies available, can be found in

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Predicting Individual Development

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The Prevailing Wisdom

EARLY THIS CENTURY one particular piece of 'wisdom' about human nature gained endorsement from very different sources. These suggested that early characteristics, whether genetically or environmentally influenced, were set into a fixed mould, thereafter changing with the greatest difficulty or not at all. In advance of reliable empirical evidence these views arose from three unrelated and at that time over-simple theories: genetic, psychoanalytic and behaviourist. They each implied that individual development was highly predictable from the earliest years, a belief which in some quarters persists unmodified today.

This constancy theory represents a fundamental misunderstanding of the nature of human development. At the outset, however, the case must not be overstated; some individuals do remain constant developmentally, on particular characteristics, over the whole life span. In music, Mozart is the supreme example.

Change, of course, is an obvious feature of development, but the idea of constancy suggests that, within the group to which the individual belongs, there will be little alteration in *relative position* or rank order (e.g., of scholastic attainment, personality factors, intelligence) during life.

In the light of modern knowledge, it is obvious that much will depend upon one's definition of constancy. If the concept is broad, then a larger number of individuals will be seen to show constant development than if it is narrow. Dividing the school population at age 7 into only three categories of ability is an example of the former; groupings into above average, average and below average IQ would be likely to yield constancy for most (but not all!) over a five-year period. A narrower categorization, such as giving an IQ number to each child, would be associated with a larger number of children changing their later status significantly with respect to their peers. It is with this traditional narrower concept that this article will be concerned. It will be argued that there are both constancies and changes in development differing for different individuals and for different characteristics.

Trajectories and Transactions in Development

It is clear that earlier concepts of development were oversimple. There are at least four major influences at work, each of which is complex, with sub-influences. First, biological mechanisms do not necessarily produce a steady unfolding of physical or mental characteristics; genes switch on and off at particular times. The adolescent physical growth spurt is an example. Second, the social trajectory does not necessarily remain unchanged as the child develops. Minor or major environmental alterations often occur. These two trajectories and their interactions are much more complex than they sound, especially since thirdly, to some extent children unwittingly play a part in eliciting responses from parents, teachers and peers which serve to modify or reinforce their behaviour. The aggressive child becomes the agent influencing a reinforcing counteractive aggression, the bright child solicits and therefore may receive more positive teacher attention, the backward child's frequent failures may affect motivation and lead to withdrawal from stimulating experiences. Moreover, the more extreme the individual's characteristics, whether of temperament or intellect, the more powerful these feedback influences are likely to be. Finally, chance events or chance encounters, which by definition are unpredictable, may sometimes prove to be so radical (e.g., bereavement) that the life path may be influenced. To call these four influences and their necessary transactions complex would be an understatement. Indeed, by their very nature they suggest some degree of unpredictability in individual development.

Measurement of Personal Characteristics

All measurement involves error, ranging from minute to large. With inanimate objects (as in physics) and with appropriately advanced instrumentation, error may be very small. With the animate, transitory changes may result in a degree of measurement unreliability (as in the assessment of the lead content in blood). Measuring behaviour is likely to result in larger errors, partly resulting from short-term changes, and partly because, unlike the assessment of temperature or height, we usually rely upon ordinary scales (rank order) or interval scales lacking an absolute zero. Standardized tests, for example, are based upon random samples or particular populations, with an anchor point often taken as the average. Teacher ratings, on the other hand, may be based only on personal experience.

If the measuring device is the same, or similar, at different ages, then a higher agreement between results is likely than if it is different. So, in considering whether, over the long-term, constancy or changes are the more important, one must first evaluate the methods of measurement.

As a further *caveat*, one must not assume that each psychological or physical characteristic is equally likely, during development, to show the same degree of constancy. For example, in the long-term, emotional stability/instability in childhood may be less constant than those conditions termed conduct disorders (these latter having a greater likelihood of persisting than the former). Moreover, once again the precision of definition will be relevant. Social competence, a somewhat woolly concept, is likely to change more than mathematical proficiency.

Constancy and Change

Two *related*, but not necessarily identical approaches can be observed in the research literature. One is the assessment of constant, or changing, *levels* of development. For example, an 8-year-old may be an average reader. Two years later the same child might still be average. On the other hand, the child may have made a major spurt and achieved an adult level of reading. So constancy and change can be measured by comparing present levels with earlier levels.

A second approach is to consider the child's *rank order* in the peer group, whether in the school, or with respect to a wider national population, the so-called normative approach. Published studies are often of a longitudinal nature; a group of children is assessed, say in middle childhood, establishing a reliable and valid base-line. Followed up, perhaps annually, for anything from five to thirty years, it is possible to track individual status. How many alter significantly or maintain their relative position? This usually depends on the lapse of time between first and final assessment; on average, the longer the time interval, the greater the changes. Since there is no reason to suppose that measurement errors are likely to be cumulative over time, most of these changes must reflect 'real' alterations in functioning.

Changing Levels

There are a few studies of individual children rescued from conditions of cruelty and neglect when originally reared by abnormal, psychopathic parents, or from concentration camps. Fortunately these are rare, but such studies often show that some children show a surprising resilience when moved to better circumstances.

Those of us who work in higher education are also aware of mature students who had a history of earlier educational failure yet later proved to be able. Such changing levels may reflect motivational increments or later development in all spheres.

Another source of research evidence relates to children withdrawn from disadvantaged circumstances and later fostered or adopted. These in many cases again indicate resilience, that is changing levels of emotional stability and within limits, intellectual and scholastic achievements. Even so, each study of groups, while indicating that changing average levels move in the direction of environmental change, shows that some individuals within them make major changes while others remain unaffected.

A famous study of Californian school children selected as being in the top 1% category for IQ was started by Terman in the 1920s and followed through to middle life, ultimately by his colleague Oden. In general, the average outcome was very good, and most of the males became highly successful in adulthood. But others (in a minority) not only failed to achieve their potential, but had become disordered failures. As will be seen, there can be a large difference between an average and an individual who contributes to that average.

Changing Rank Order

Follow-up studies are to be found in their hundreds, with findings that show reasonable consistency. As noted, short time intervals are associated with smaller changes in individual status than are longer ones. These results are usually measured by correlation between first and later

assessments so that small correlation coefficients reflect greater individual changes. For some individuals these increments or decrements may represent little more than fluctuations in rank order on the characteristic being assessed. In other cases there may be long term trends, up or down, or even plateaux.

Specifically, personality measures, educational assessments or IQ scores usually follow this time-related generalization. But this 'law' is an average statement. Individuals vary widely in the stability or otherwise of their rank orders. Moreover, as noted, much also depends on the characteristic being assessed and on the method of assessment. Some members of a group show major changes over time, others very little.

If findings are based only on averages for groups, such measures often remain similar over time. Around these averages, however, there can be much variation with opposing trends cancelling each other out in statistical terms.

The principles so far outlined are well illustrated in a famous 1971 study which brought together two earlier follow-up researches in which a variety of personality measures were established for children from age 15, again at 18 and finally in their early thirties. Changes between 18 and 33 were, as would be expected, larger than between 15 and 18. The researcher in one of the two studies once mused upon her own results, writing that 'Many of our most mature and competent adults had severely troubled and confusing childhoods and adolescences. Many of our highly successful children and adolescents have failed to achieve their predicted potential... As children and adolescents, they were free of severe strains, show high abilities... and were the adulated images of success... One sees among them at age 30 a high proportion of brittle, discontented and puzzled adults...' From her earlier standpoint which had expected constancy, she went on to note that 'we were not always wrong! We did have several small groups whose adult status fulfilled theoretical expectations' (i.e., constancies). Although this is subjective commentary, the author's surprised reactions to her own findings are impressive. Working from a traditional theory, long-term prediction should have been accurate whereas in most cases it was not.

Discussion and Summary

From studies comparing adopted children with their true parents, adopted parents, adopted siblings and true siblings, and from research on identical and non-identical twins, it seems clear that genetic and other constitutional factors play a moderate to substantial role in the development of particular human qualities. Yet the working of these genetic mechanisms is often misunderstood. Rarely do these dictate a precise outcome (e.g., as in eye colour); more often they provide a range of possible reaction, that is they will be modified in their expression by interaction with the environment. There are, of course, limits: the range of reaction has a floor and a ceiling, differing for different individuals. Children brought up in conditions of disadvantage are likely to function below their potential, and a number of studies show that a radically improved environment is often associated with marked improvement in the child. On the other hand, children reared in a range of humane and stable environments probably function near their genetic ceiling.

We must also recall that the ceiling itself may be heightened at varying rates during development.

We have argued that the environment changes during children's lives; indeed, it cannot fail to do so. A 5-year-old exists in a framework of parental and peer relationships. Five years later these are bound to be different. Moreover, as we have argued, the child's own qualities unwittingly play some part in individual development by way of feedback from others and the choices made with respect to peer groups. Finally, chance events or encounters further complicate an already complicated equation. These four influences by themselves suggest that for a majority a *narrow* constancy over long time periods is unlikely.

Evidence supporting this view has been briefly outlined from studies of changing levels of functioning. These have largely concerned the outcomes for victims of severe privation, after rescue and placement in good circumstances. Such investigations might have little bearing upon ordinary development because of the rare and gross deprivations visited upon such children. However, they show in exaggerated form the processes less obvious in children reared normally. For evidence on these latter, we turned to the hundreds of follow-up studies of various groups of children. While some children's development does remain constant, others show changes, sometimes little more than fluctuations but in some cases, long-term trends. Such findings emerge from studies of scholastic attainment, personality and IQ. In essence, therefore, they show that long-term individual (as opposed to group) prediction cannot be entirely accurate. While we expect bright groups to remain so, or dull groups similarly, individuals within each may change for better or worse.

There are, of course, unusual childhood conditions where prediction is much more accurate. For achieving independence, the outlook for autistic or severely handicapped children remains poor. Those children described as exhibiting severe conduct disorders are to a considerable extent at later risk for adult psychiatric disorders. On the other hand, children with minor but troubling emotional problems usually have a good adult outcome.

If one could predict accurately the life path for individual children, then planning their future would be simple. Perhaps this attractive notion is one of the factors responsible for the common persistence of an unmodified constancy theory. Long held views are usually difficult to shift, and it is interesting to note the ways in which the implications of the sort of findings we quote have in the past been avoided. First, there have been absolute denials of relative change, ascribing this solely to diagnostic error. Retarded children who, years later functioned better as merely dull normal were assumed to have been misclassified earlier. Since people do not change, any change must be spurious! Second, alterations in relative status have often been assumed to have been merely skin deep, with underlying mental structures unaltered. Jerome Kagan laments that he spent 20 years trying to generate proof that behavioural differences apparent during the first two years of life were preserved in some way for the next decade. He likened himself in this respect to Don Quixote!

The third way of holding on to the constancy notion has been to believe that we are measuring the wrong quality of the individual; if only we could find the 'basic' characteristic then constancy would emerge. Some noble attempts to predict from early temperamental qualities of infants have, however, failed.

The point is that if one searches for constancies one will find them for some processes in some children, and if one seeks evidence for relative change in others one will also

find it. Only if one is aware of the possibility – or better, the likelihood – of both, will a fair-minded view be possible.

What, then, are the implications for our understanding of individual children?

First, there needs to be an awareness that human development is to an extent – and for some children – somewhat open-ended, in spite of the fact that social pressures tend to push the individual along a pre-determined track. For example, 'problem families' tend to produce 'problem children', but a significant proportion (probably about a third) escape the usually gloomy forecast, emerging as normal citizens.

Second, where apparent change for better or worse occurs, we need not necessarily expect that this results from earlier assessment errors in the school room or elsewhere. Changes reside primarily in the nature of human development itself, even though one must be aware of the possibility of errors in evaluating individuals.

Third, the task for the teacher is to try to maintain in children desirable constancies and encourage desirable changes, while combatting undesirable constancies and negative changes.

Easier said than done! Nevertheless, these implications are clear, and sensitivity to the complexities residing within each child is likely to become more widespread as the nature of human development becomes better understood.

Notes

Alan Clarke is Emeritus Professor of Psychology at the University of Hull and Ann Clarke is Emeritus Professor of Educational Psychology, Department of Educational Studies, in the same University.

The present article is derived from a number of the authors' research papers dating back to the 1950s. The most recent and detailed are 'Constancy and change in the growth of human characteristics', *Journal of Child Psychology and Psychiatry*, (1984), Vol.25, pp.191–210, and 'The adult outcome of early behavioural abnormalities', *International Journal of Behavioural Development*, (1988), Vol.11, pp.3–19.

A major text by O.G. Brim and J. Kagan (1980), entitled *Constancy and Change in Human Development*, Cambridge, Mass.: Harvard Educational Press, offers an exhaustive coverage of this theme.

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RESEARCH INFORMATION FOR TEACHERS

NUMBER TWO 1989

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Bonus Report on the New Zealand cartoon competition.

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Judge's comments overleaf

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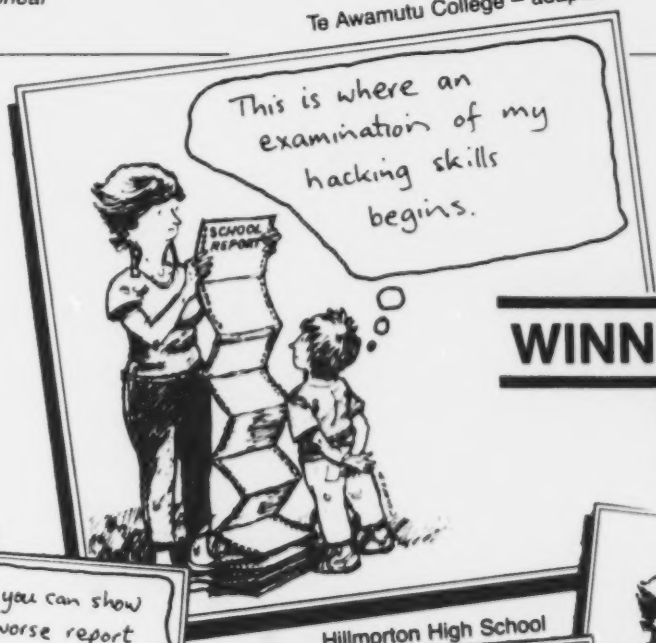

WINNER

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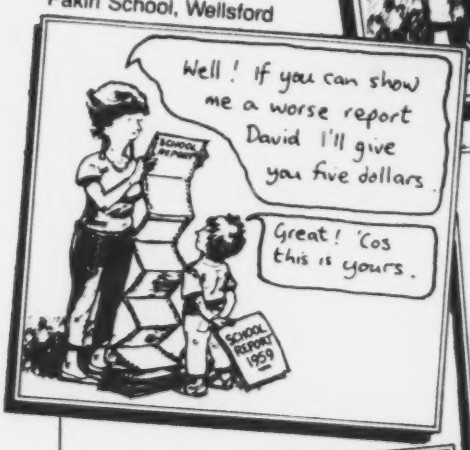

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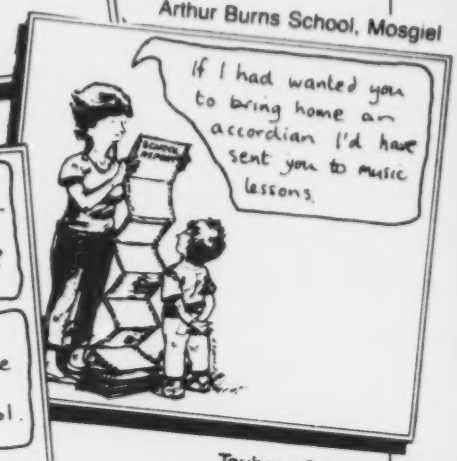

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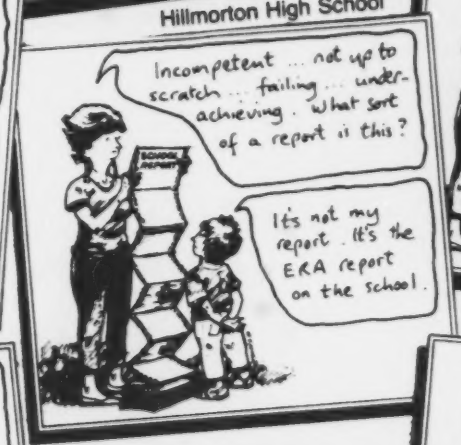
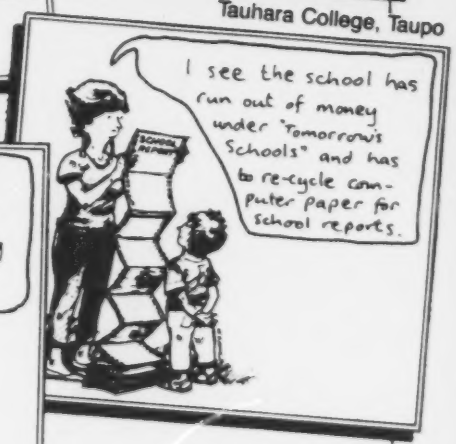
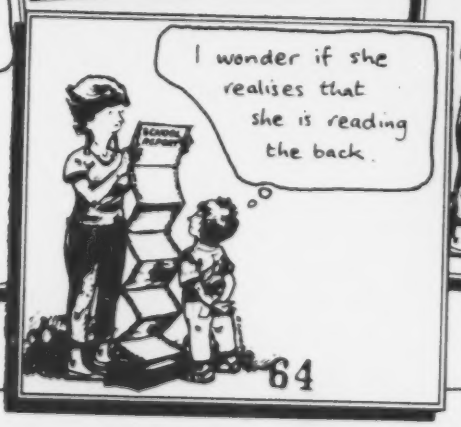

Incompetent ... not up to scratch ... failing ... under-achieving. What sort of a report is this?
It's not my report. It's the ERA report on the school.

Tauhara College, Taupo





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Judge's comments

SEVERAL SCHOOLS took the repeated pictures to be parts of a nine frame story. That was either lateral thinking or a fine example of how differently we perceive the same thing – I thought I was giving nine teachers a chance on every poster! A sole charge teacher came up with nine seperate jokes – another unforseen possibility.

Topical themes were common. It appeared just at the moment when David Beatson issued his first press statement as PR-man for the National Party, and included a spelling mistake. Mum was saying in one frame "David Beatson, Spelling. One out of ten. Will have to get his ends together." There were several about the "Colour Purple" controversy – should it be a set text in the 6th form?

The re-structuring of New Zealand's educational administration gave rise to several cartoons, but most were bitter or "in" jokes mentioning names and official positions.

Then there were the computer jokes. Some of these were excellent, others less successful. And the "School Report" jokes, taking the mickey out of tired phrases like "could do better". Five people used the old joke of the child writing the report him (her?) self. That was good coupled with the computer printout. The winner used this ploy and extended it.

Several teachers played on a "double take". And some runners-up used the length of the report to bring it about.

And there were some real mavericks, such as the boy reading through the paper from behind "[illegible]", and one bright person altered the drawing.

I suppose what I was looking for was a joke which used everything in the picture; the computer paper, the length of it, the startled mother, and the school report. There wasn't one that did all those. Here is a selection of the best, the winner in the centre, slightly tightened up.

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Contents

1. **Contents Sheet**
Circulate a copy or pin one on the staffroom noticeboard.

2. **'A' for Accept; 'R' for Reject**
Ken Adey
Anyone who has been through a job interview or been on a selection panel will appreciate this research on how it is done and how it should be done.

3. **Participation in Education**
Trevor Williams
Everyone goes to school until 15. After that you choose further education for yourself. What do Australians choose? Are there factors which limit their choice? If so, what can be done about it?

4. **Pattern Notes: a New Learning Strategy**
David Jonassen
Just giving information does not ensure that it is learnt. Here are two strategies that help learners organise what they are trying to learn. Then follows a way of doing a deeper analysis.

5. **The Female Athlete**
Jack Wilmore
The demands for equal opportunity are getting attended to. But were the sexes created equal in athletic characteristics? The answers are important for schools and for careers with physical demands.

6. **Unlocking the Great Secret: Writing Reveals Thinking**
Graeme Withers
Marking exercise books is a chore but it reveals errors. What caused the errors? Using process writing the children can tell us where they went wrong, and save us a lot of tedious work. This technique works in *all* subjects.

7. **Inter-group Discrimination**
Graham Vaughan
Our past suggests that prejudice and discrimination are part of the human condition. This review of research looks back and forward. The disease looks curable, with constant hard work.

8. **Dealing With Conflict: Mediation Programmes in Schools**
Jan Cameron and Ann Dupuis
Mediation is a voluntary service to help children, and staff, find a way to resolve interpersonal problems. Staff help but the mediators are trained pupils. A successful Christchurch scheme is enthusiastically described.

9. **The Information Quest**
Penny Moore and Alison St. George
Projects are a good way of motivating hard work and the quest for information. But lots of difficulties lie to waylay the eager child. Research uncovered many, and points to ways to overcome them.

10. **Owning Your Own Writing**
David Philips
As we write we construct knowledge, we manipulate information, we develop ourselves, and we get as a bonus the pleasure of authorship. Successful teachers of writing were observed and the techniques they used are revealed.

11. **On Being Insane in Sane Places**
David Mingay
If you mix sane people, doctors and students of psychology, with people certified as insane from a psychological hospital (but keep the distinctions a secret) what happens?

12. **Exploratory Studies in Educational Computing**
Dave Atmore and Barbara Craig
The New Zealand Education Department put up the money, schools suggested research they could do, NZCER checked the methods and is analysing the data. Now advice is available about word processing, databases, videotex, LOGO, handicapped children using computers...

13. **Beginning to Learn Fractions**
Robert Hunting
Is 7 sixteenths bigger or smaller than 8 seventeenths? Fractions are notoriously difficult, to learn and to teach. A good beginning is very worthwhile and this research with 4- and 5-year-olds shows the way.

14. **Teaching Economics Using the Media**
Alan Gregory
Economics questions and issues are always on the TV and in the papers. Research on the quantity and quality of economic items in the media leads to help with using this resource in class.

15. **Networking Style: How Principals Manage Curriculum Change**
Hank Schaafsma
Seven case studies of principals over a two year period revealed how they managed the introduction of new curricula. Their networks among their staff were of vital importance.

Bonus Report on the New Zealand cartoon competition.

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'A' for Accept; 'R' for Reject

The Alphabet for Selecting and Promoting Teachers

By **Ken Adey**
University of Nottingham

Introduction

APPLYING for a new teaching job in New Zealand and Australia used to be pretty cut and dried – the best qualified was selected and appointed by the Education Department. Times change. In New Zealand all appointments are now in the hands of Boards of Trustees. In Victoria the community has a hand in choosing school principals.

The new New Zealand system is akin to the procedure commonly followed in appointing teachers to vacant posts in state primary and secondary schools in England and Wales. British experience can throw light on how parent trustees and other board members should go about choosing a new teacher.

The Research

The English system has altered little in a quarter of a century, despite the widely-held conviction of many teachers and selectors that the selection processes employed are inadequate. In 1985-8 I carried out research into *selection*, *promotion* and *criteria* to discover if selection processes are indeed weak and, if so, how they can be improved. The selection processes were monitored for 26 vacant posts in ten secondary comprehensive schools. This monitoring included observation of the formal interviews and decision-making discussions for 94 candidates.

Attracting Applicants

Vacancies were advertised in local and/or national newspapers and prospective candidates contacted the school to obtain 'further details' and an application form. Many candidates commented that the 'further details' supplied failed to provide sufficient information about the school and post. As a result unsuitable candidates, who later were rejected or who withdrew at the interview stage, applied for posts which they might not have applied for if more detailed information had been made available at the outset.

Candidates were asked to submit a completed application form and a letter of application. No guidance was given about the information to be incorporated in this letter.

Shortlisting

Initial selection/rejection decisions were made from the candidate's application form and letter. A longlist of candidates was drawn up and a confidential reference obtained from their present employers. The reference provided more information and a shortlist of candidates to be interviewed was devised.

Having a look at the shortlisting process revealed deficiencies which permeated the whole selection procedure. The shortlisters were senior school staff, with the headteacher usually the most influential, and, for promoted posts, the appropriate Local Education Authority Schools Adviser. They all failed to identify clearly the expertise and experience needed. A detailed job-description rarely existed and, even where such a description was available, it was not used to identify the knowledge, skills and experience they were looking for. Shortlisting selection criteria were not established before the shortlisting process began; rather they emerged during the process. As one headteacher commented, the shortlist was devised by 'norm-referencing.'

An analysis of the selection criteria which emerged revealed that selection/rejection decisions were usually based on:

1 having the 'right' career track record (i.e., age, scale of present post, length of time in present post);
and/or
2 having something to offer which attracted the Selectors' (usually the headteacher's) attention and made that candidate's application 'different' in some respect to the majority. Shortlisters' comments revealed that the sort of features that distinguished shortlisted candidates from those rejected at this stage were: impressive qualifications; advisers' positive reports of performance in present post; the philosophy expressed in a letter of application; aspects of candidate's past experiences that appeared useful; the speed of past promotion as a sign of potential;
and
3 having a positive reference from the candidate's present headteacher or (for entrants into teaching) from a college/university tutor. However, this reference was unlikely to be accepted at face-value. There was a widespread view that references had to be de-coded: Selectors felt that they had to 'read between the lines'. The possibility that they could misinterpret references was obvious.

Many candidates were rejected after interview because of deficiencies which were clearly identifiable at the shortlisting stage but not noticed. This lack of precision resulted in shortlisting unsuitable candidates; it is almost certain that it resulted also in the rejection of potentially suitable candidates.

The 'Tour'

For all but the most senior school posts (i.e., the principal or deputy principal) the final selection process took place in the school and was confined to one day. Shortlisted candidates were given the opportunity to meet senior staff and discuss details of the school and post, and to 'tour' the school. The purpose of the tour was to provide candidates with the opportunity to form an overall impression of the context in which they would work if appointed. They saw the facilities available, the department in which they would work, and met other staff informally. The tour was regarded as an important exercise which enabled candidates to acquire more information about the school and post by observation and questioning.

Despite a widely held conviction amongst teachers that candidates were under scrutiny during the tour and preliminary discussions and that what they did and said counted in the final selection, my research uncovered no evidence of this. Although the 'tour guide' often conveyed his or her personal impressions of candidates to the headteacher before formal interviews began, the final decision-making discussions showed little evidence that these impressions influenced the decisions. Indeed, I saw only one instance in which a pre-interview impression of this sort was passed on to other members of the interview panel by the headteacher.

The Interview Panel

The size of the formal interview panel ranged from 2 to 14. There were always professionals on the panel (e.g., headteacher, deputy headteacher, head of department, Local Education Authority School Adviser). Although the responsibility for recommending appointees to the Local Education Authority lies technically with each school's governors, with professionals acting in a purely advisory capacity, in practice the interview panel for non-promoted posts often consisted entirely of professionals. For promoted posts governors were always represented, although the number of governors attending varied from school to school, even from post to post within the same school. As a general rule, the more senior the appointment to be made, the more governors were likely to attend the formal interviews. The governors of a school represent parents of pupils, the teaching staff and the Local Education Authority (LEA). LEA representatives are usually members of the political parties which make up the Local Council. In addition there are governors co-opted for diverse reasons, for example to provide further political representation; to represent local industry or commerce; to represent higher education institutions. The majority of governors are lay people with no first-hand knowledge of what the teacher will be doing.

Thus the final stage in the selection process (the formal interview) sees the introduction of new selectors (the governors) who have no prior knowledge of the candidates and little knowledge of the nature of the post to be filled. In the interviews I saw, governors had received only the details sent to applicants. They had not seen any evidence about the candidates, the application forms, letters of application, references, until they arrived to conduct the interviews. There was almost no time available to examine this evidence and no guidance was given by the professionals about what to explore during the interview. Indeed, it was clear that the professionals were not able to provide guidance to the governors. The professionals were responsible for selection decisions at earlier stages and made those decisions without job descriptions or person specifications, and without establishing the criteria they employed. Similarly, at the interview stage, the professionals failed to establish beforehand the criteria to be used.

Interview Order

The 26 interviews resulted in 23 appointments: but only five of the successful candidates were interviewed after the mid-point in the interview order. Candidates in the bottom half of the interview list were at a significant disadvantage. This occurred no matter how short the queue of candidates but the disadvantage was most pronounced when there were more than four. It is common practice in English schools to interview candidates in alphabetical order of surnames, and this occurred in all my cases. So, if that is what happens at your interview, your name has a vital bearing on your chance of success! Ms Rose has less chance than Ms Bindweed.

Selecting without help

Lacking any agreed criteria selectors relied heavily on their perceptions of each candidate's personality and personal qualities. Selectors favoured those candidates whom they found 'warm', 'dynamic', 'committed', 'enthusiastic' and possessing a 'sense of humour'. Candidates who, it was felt, had 'outgoing personalities' were likely to be judged suitable for appointment because it was felt that they would have the ability to form good relationships with pupils and fellow teachers and (for promoted posts) the ability to provide leadership. Indeed, favourable perceptions of a candidate's personality could over-ride deficiencies in experience and expertise recognised and acknowledged by the selectors. Conversely, candidates judged to have the 'right' experience and skills were likely to be rejected if selectors had doubts about their personal qualities.

Selection decisions reached in this way were often rationalised *post hoc* by reference to the candidates' expertise or experience. But such references were usually vague, imprecise statements, unsupported by any specific reference to aspects of career, experience, skills or interview answers. The following are typical of such selector comments:

'She wasn't clear on a range of issues.'
'Some aspects of her skills were good, others ropey, but this need not be a problem.'
'He has done a number of good things.'
'Plenty of ideas floating around'.
'She has a good basis of experience.'
'The technical stuff came across quite sensibly.'
'Perceptive on a wide range of issues.'

Selection by rapport

To create a favourable impression of their personal qualities, candidates had to be able to establish rapport with their interviewers. Selectors favoured candidates with whom a clear flow of conversation could be established and consequently with whom they felt relaxed and at ease. Successful candidates were those who 'came over well' or 'related well to us'. Unsuccessful candidates were those who 'didn't show up well in the interview' or 'didn't come over well.' Candidates likely to be judged to possess the 'right' personal qualities were those whose performance in the interview was judged to be 'fluent', 'clear in expos-

ition', 'forthcoming'. Such candidates were 'confident' 'relaxed', 'positive'. Although selectors often made sympathetic comments about nervous, tense candidates whose performance was 'restrained', 'unclear in expression' or who 'needed prompting', such candidates would nevertheless be criticised for lacking 'desirable' personal qualities and thus would be rejected.

Unshakable conviction

The selectors attached a lot of importance to their assessment of the candidate's personality, as they saw it, during the interview. This also favoured those candidates who came early in the interview order. The first person who was able to establish rapport with the selectors, that is, the first with whom the selectors felt relaxed and comfortable, was most likely to be picked as the person suitable for appointment. Later interviewees faced the task not only of trying to prove their suitability but also of trying to change the minds of selectors who believed that they had already found the right person. If there were more than three candidates to be interviewed, the chance of shaking the selectors' liking for an earlier candidate diminished.

Fairly sure that they already had the right man or woman for the job, the selectors changed the pattern of questions and made it more difficult for candidates to establish the essential rapport. The flow of a good interview relies upon the ability and willingness of the selectors to pick up aspects of candidates' answers to main questions in order to put supplementary questions which probe that subject more fully or edge the interview smoothly towards the next line of enquiry. In the tail end interviews this supplementary questioning decreased significantly.

Structural descent

The interviewers' feeling that they had already found the best person for the job, combined with the difficulty of maintaining concentration during a lengthy period of interviewing, meant that the interviews of later candidates consisted mostly of a mere progression from one main question to the next. The failure of interviewers to respond to candidates' answers by identifying points for further enquiry or comment obviously hindered the development of a conversational atmosphere. The interview became less of a conversation, more of an interrogation.

As selectors did not facilitate the flow of conversation it was more difficult for later candidates to appear 'confident and relaxed' or 'dynamic' and 'enthusiastic'. Thus rapport was not established and the selector's conviction that an earlier candidate was the most suitable was reinforced.

Summary

The manner in which personality was assessed (on the evidence of how the candidate behaved during a formal interview), and the overwhelming importance attached to that one glimpse of personality, especially as a sign of leadership potential, illustrate the inadequacy of selection procedures in which the unstructured interview is the key selection device. Even where written evidence is noticed the selection/rejection decisions almost certainly lacked reliability and validity.

Improving Present Practice

Better assessment

Clearly, selection criteria and a strategy for assessing candidates (against these criteria) need to be defined at the outset of the selection process. These criteria should be derived from a job description and person specification. Then selectors must use these criteria, first identifying what is to be assessed at each stage of the selection process.

1 *'Further Details'*

'Further Details' of the school and the vacant position sent to potential applicants need to be comprehensive in their coverage. Applicants need adequate information on which to base their initial application/withdrawal decisions. There are many books on school management containing adequate, commonsense guidelines for the construction of these details.

2 *Longlisting*

The decision to put someone onto the longlist has to be based on the written evidence supplied, that is, on the application form and letter of application.

To do a good job of comparing the candidates against relevant criteria this written evidence needs to be uniformly structured. Applicants should be given instructions about what is wanted in their letter of application, the topics they should mention, at what length, and the order in which to cover them. Alternatively a questionnaire could replace the traditional letter of application.

If references from present employers are needed referees should be requested to comment on specific aspects of the applicant's 'qualities' and 'performance'. Structured references, as described, or reference questionnaires, appear to be essential if boards are to avoid the widespread practice of trying (with inconsistent results) to 'decode' references.

3 *Shortlisting*

Selectors are usually concerned that the selection process should not be too time-consuming. However, the final selection process for posts which carry administrative and managerial responsibilities in large secondary schools surely merits a greater time allocation than the customary one day. The reliability and validity of selection decisions can be increased if more time is allowed.

Longlisted candidates could be invited to attend a preliminary selection procedure (Day One). Assessment here should be by the professionals, to select a shortlist of candidates to attend for a final interview where the selection decision lies in the hands of lay governors (Day Two).

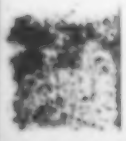
Day One could consist of semi-structured one-to-one preliminary interviews conducted by senior professionals and of exercises of the kind pioneered by the Vancouver School Board and the American National Association of Secondary School Principals (e.g., 'In-Basket' exercises, leaderless group discussions). At the end of Day One selectors should be able to compile a shortlist – candidates who have the requisite knowledge, experience and skills (or the potential to develop these skills) to merit further consideration.

Day One should also provide the opportunity for candidates to inspect the school and relevant department, to meet potential future colleagues and to talk to pupils. This would enable candidates to assess whether they wish to pursue their application or withdraw from the selection process.

4 *Final Interview*

The present practice of holding a final interview conducted by a panel of professionals and lay governors (with the selection decision lying in the hands of governors) will undoubtedly continue in England and Wales. A large body of research suggest that the reliability and validity of the interview can be increased. Follow these guides:

a) The interview must be used alongside other selection devices, such as detailed application forms and structured references, management exercises and discussions.



b) The interview must be structured or semi-structured and a rating chart which identifies what is to be assessed in the interview used by the selectors.
c) The content of the interview must be carefully linked to a job analysis. Interviewers must be well informed about that analysis of the post to be filled.
d) The purpose of the interview must be limited to the assessment of a small number of traits.

Thus the final interview needs to be carefully planned and structured. Those who make the final selection decision must be given the information and guidance necessary – they need it to reach a decision based on relevant criteria and not be influenced by things that have nothing to do with the job. Responsibility for providing this information and guidance to the lay members rests with the professionals. It is, unfortunately, a responsibility not shouldered by them at present in Britain.

If this selection strategy is followed, the selection programme for a secondary school head of department could look like that in Table One

Table One: *Selection Programme For The Appointment of a Secondary School Head of Department.*

Stage	To be Assessed	Source of Evidence
Longlisting	i. Qualifications ii. Other relevent training iii. Career Track Record iv. Type of experience	Application Form
	i. Experience ii. Educational Knowledge iii. Managerial Knowledge iv. Teaching Skills v. Written Communication	Structured Letter of Application
	i. Teaching Skills ii. Organisational Ability iii. Leadership iv. Sensitivity	Structured Reference
Shortlisting	i. Educational Knowledge ii. Managerial Knowledge iii. Teaching Skills iv. Oral Communication	Semi-Structured One-To-One Interview
	i. Problem Analysis ii. Judgement iii. Organisational Ability iv. Written Communication	'In-Basket' Exercise
	i. Sensitivity ii. Decisiveness iii. Leadership iv. Stress Tolerance v. Oral Communication	Leaderless Group Discussion Exercise
Final Selection	i. Range of Interest ii. Personal Motivation	Panel Interview

Better assessors

5) *Training Selectors*

The people who do the selecting, professional and lay, need training, for their own consciences sake at least. For example, if written and verbal problem-solving exercises are to be used in selection, the exercises must assess knowledge and skills that are truely relevant to the responsibilities of the vacant post. Developing appropriate exercises is not easy, needs to be learned, and assessing a candidate's performance in the exercises needs expertise too. Inappropriate exercises and inadequate or erroneous assessment will not get you the staff you are looking for.

There are good books on selection and interviewing. Some of these are mentioned in the Notes. The techniques of good interviewing can be learned. The first step is to be better informed, so lay governors should insist that professionals supply full details of job and applicant. In the interview, that knowledge will help all selectors to get relevant information from the interview and then to make selection decisions based on the cumulative evidence of the whole selection process, instead of on interview evidence alone.

Notes

Dr Ken Adey is a Lecturer in Education at the University of Nottingham. He was Researcher in Education at Wolverhampton Polytechnic when he carried out this research.

Further Reading

Morgan, C., Hall, V. and Mackay, H. (1984) *A Handbook on Selecting Senior Staff for Schools*, Milton Keynes: Open University Press. Guidance on structuring each stage of the selection process.

Dean, J. (1985) *Managing the Secondary School*, London: Croom Helm. Useful suggestions for content of school/post 'further details'.

Keats, Daphne (1988) *Skilled Interviewing*, Melbourne: ACER, 112 pp. A general text about many different kinds of interviews.

Goodale, James G. (1982) *The Fine Art of Interviewing*, Englewood Cliffs: Prentice Hall, 224 pp. A standard text.

Bolton, G.M. (1983) *Interviewing for Selection Decisions*, Windsor: NFER-Nelson, 48 pp.

Bolton, G.M. (1983) *Testing in Selection Decisions*, Windsor: NFER-Nelson, 48 pp. A text for professionals.

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PARTICIPATION IN EDUCATION

By **Trevor Williams**
ACER

Non-Technical Section

Who gets what education?

IN DECEMBER 1986 ACER published a major report on this topic. Rates of participation have climbed a bit since then but the factors which influence who gets what education have not. The report itself has the details, this summary looks at the broad trends.

Everyone goes to school till 15. After that you may choose. What do Australians choose? Are there factors which limit their choices? If there are, what can be done about it?

In the late 1970s and early 1980s only 37% of all young people completed the full 12 years of schooling. 35% finished all contact with formal education during the secondary school years. Another 28% of all youth found their way into TAFE courses and 20%, mostly boys entered that form of combined education/training/work experience provided by the apprenticeship system. Between 20 and 25% of all young people enrolled in higher education, at a CAE or a University and 14% of all youth begin a degree.

For a society committed to a standard of living characteristic of Western industrial democracies, and one which competes with these same nations to maintain this standard of living, these are disturbing facts. They mean, in other words, that more than one half of the next generation will not have completed secondary schooling, four out of ten will not have had any formal education after leaving school and only one in seven will have tackled the higher levels of education found in a degree programme.

Schooling after 15.

Nearly two thirds of the nation's youth does not complete all the twelve years of schooling available. Three sets of factors are most important.

The first concerns achievement – doing well in school. Those who learn well what schools teach are three times as likely to complete Year 12 than those who fail to learn. This makes sense. Those who learn well are rewarded by schools, find schools a reasonably congenial place, and stay on. Those who do not learn well find school a less than rewarding experience and, understandably, leave. And since we are talking about the learning of fairly basic skills in this instance, skills well within the capabilities of most students, some of the blame for this situation must lie with the process of schooling. Part of the problem seems to be that methods of teaching and learning are not always tailored to the needs and capabilities of students.

The second group of factors concerns schools as well. School system appears to be important. *Other things equal,** students who attend non-government, non-Catholic schools have twice the chance that students in government schools have of completing Year 12. Why? We were not able to say but we were able to take into account several of the common explanations. While between-system differences in student characteristics were partly responsible they were not sufficient to account for all of the differences; in fact, the two-to-one ratio is what is left after these explanations have been taken into account. Do the non-government schools do things better? Perhaps; but we cannot be absolutely sure. Whatever, in the interests of equity it seems worthwhile to gather *facts* on what it is about non-government schools and/or their students that result in these higher Year 12 completion rates. Such facts could well serve as a basis for focussed compensatory programs.

The third group of factors relate to students' families. The basic findings are these. The *social* status of families makes a substantial difference to whether or not young people complete Year 12. Differences in *economic* status between families have an effect as well. *Other things equal*, 50% of the students at the upper end of the *social* status range, doctors', lawyers' and the clergys' children, will complete Year 12, compared with 30% of those at the lower end of the social range. The effect of family *economic* status is less: 40% of the wealthiest stay on, 30% of the poorest. Social status, rather more than money underlies the drive to finish school.

However, things are changing: family wealth was not an important consideration in the late 1970s but in the early 1980s it grew in importance as economic conditions worsened. These facts justify programmes of financial assistance for less well-off students in secondary school. The introduction of AUSTUDY in 1987 may go some way toward making family wealth less important to finishing Year 12.

Other differences seem less important. Rural disadvantage is minor. Slightly more females complete Year 12. The children of immigrants from non-English-speaking nations are not disadvantaged.

Year 12 completion rates are likely to be increased most by changing preferences. Adult preferences are hard to change but provisions which allow all students to learn, (perhaps through the tailoring of teaching to students) and which allow all students to experience success in school, are the best hope. Programmes based on alternatives to traditional schooling are being implemented at present, and seem to work. While no one seriously believes these will produce equal outcomes, they will produce *more equal* outcomes and, hopefully, a preference for education that will hold students in school longer.

* see technical section

Post-secondary Education

Does education after secondary school attract students? Yes – somewhere between 50 and 60 percent entered some form of post-secondary education. Seen the other way, 40% of young people abandon formal education completely, never to resume, sometime before Year 12. 33% entered a TAFE course by age 19. 20% enter higher education, and 14% begin a degree program. In most cases the participation rates of males exceed those of females. This difference is most pronounced for TAFE courses, particularly apprenticeships.

TAFE and Apprenticeships

TAFE courses serve more of the population than any other form of post-secondary education, mainly because apprentice training is undertaken in TAFE colleges. These courses draw from all social status levels about equally or, at least, more equally than other forms of post-secondary education. However, differences in family wealth affect participation in TAFE more than in any other sector of education. Other things equal, the proportion of students from wealthy families who enter TAFE is almost twice that of students from poor families. Many of these students will be part-time and, hence, ineligible for existing student assistance schemes. We see these data as a clear justification for a re-thinking of student assistance for TAFE students.

In other respects TAFE enrolments reflect the popular view of TAFE and, to a degree, the rationale behind the establishment of this educational sector. TAFE attracts students who have not completed Year 12, those who have not achieved highly; it does not attract students from Independent schools; it attracts smaller numbers of females. This disproportion comes about because few females enter apprenticeships.

Apprenticeships aside, TAFE actually attracts more females than males. In short, TAFE populations reflect the purpose of the institution; it fills a (large) gap in the education system, catering for those who are not inclined toward the traditional academic programs of universities or CAEs but seek further training, usually job-related.

Higher Education

By age 19 about 20% of young people are enrolled in higher education either at a university or a CAE. Three-quarters of these are in degree programmes. In each instance the social mix of the student populations fails to respect the social composition of the population as a whole. 70% of the students in higher education come from white-collar backgrounds. Those from wealthy families outweigh those from poorer families by three to one, relatively speaking.

Disproportionate numbers of young people from non-English-speaking immigrant backgrounds attend. Marginally smaller proportions of rural students are represented. The participation rate of students from non-government, non-Catholic schools is more than three times that of students from government schools. Gender differences are minor overall, but a smaller proportion of female Year 12 graduates enrol in higher education.

Level of attainment in school has a marked effect and few young people who complete less than 12 years of schooling ever enter higher education. Of those who complete Year 12 about 50 percent enrol in university or a CAE.

The socioeconomic imbalance in higher education has been a matter of concern for at least three decades, generally because the situation is thought to be inequitable and wasteful of talent. The facts of the matter, as our analyses portray them, are these.

First, a sizeable part of this socioeconomic imbalance comes about because disproportionate numbers of students from blue-collar backgrounds fail to complete all 12 years of schooling and, thus, render themselves ineligible.

Second, among those who complete Year 12, fewer have the levels of achievement to continue on in a scholastic environment. We can find no evidence that social status or economic circumstance are a direct impediment to access to higher education. *Other things equal*, among those who completed Year 12 there is no socioeconomic imbalance to speak of.

However, it is important to keep in mind that this apparent equality of access may be the net result of a balance of social forces. We found, for instance, that fewer of the less well off attended university and CAEs in the 80s and in the 70s, and that this falling off was greater among females. We attributed this decline to the economic recession apparent in the first years of this decade. If we are correct in this then an important point is made – less well-off families are more sensitive to economic pressures. Thus, any increased demand on the economic resources of lower income families is likely to reduce the participation of their children in higher education, especially females, and create a socioeconomic imbalance where none exists at present.

Access? Preference?

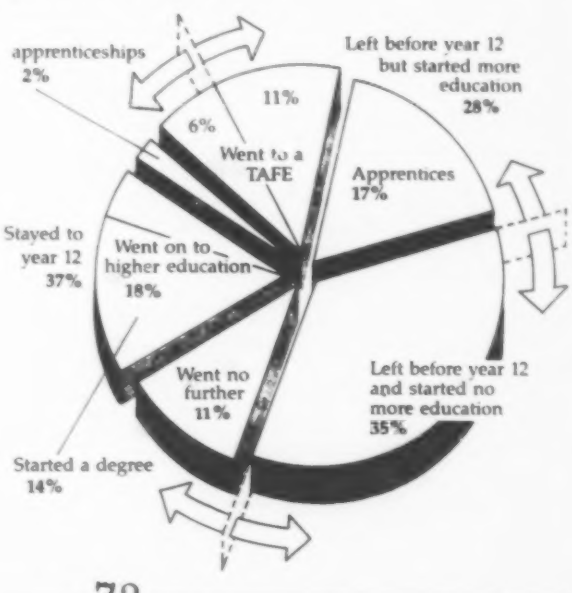
We looked at the question of access to education. Overall, gender seemed to be a minor impediment other than for participation in TAFE.

Ethnicity turned out to be even less of an impediment. The popular view of immigrants from non-English-speaking backgrounds labouring under the twin disadvantages of a language and culture different to that of the majority (plus, perhaps, outright discrimination), are not borne out by our analyses. Students from non-English-speaking backgrounds participate in most forms of education at higher levels than do the majority.

Social status, of course, exhibited its law-like relationship to educational achievements and attainments. Top SES people get in and do well. Bottom SES people do not get in.

Geographical impediments to participation were minor

Figure 1. All 19-Year-Olds



and limited to rural males. In short, there is little evidence in these data that gender, geography and ethnicity restrict access to education. N.B., while social status restricts participation, it does not restrict *access* – the chance to go to University is still there. Social status differences are mostly differences in *preference* for one sort of education over others.

Economic circumstance is however, an impediment to participation. This has not always been so (except in TAFE). In the late 1970s the economic circumstance of families mattered little. By the early 1980s, in higher education, participation by students from low-income families had declined but wealthy students increased in numbers. We attributed this to the increased economic pressure exerted on low-income families by the economic recession of the early 1980s. On this basis we assert the truism that low-income families are those most affected by changes in economic circumstance. Increases in the relative cost of education will reduce the participation of students from these families, especially female students, as it has done since the late 1970s. On the other hand, financial assistance to low-income families will increase the participation rates of their children in both post-compulsory schooling and post-secondary education.

While such assistance is likely to restore the apparent equity of late 1970s by providing equality of access it is unlikely to raise participation in higher education overall to the levels desired. As with completing Year 12, to do this one must alter preferences for education. These preferences reside in both families and students. Changing the educational preferences of parents probably is impossible in any practical sense. That leaves the preferences of students as the target and schools as the agent of change. Some schools, it seems, are able to do this; other things equal, the participation rates of students from low social status families are higher in non-government schools than they are in government schools. Maybe these schools are doing things better; whether by design or default is unimportant. What is important is that we discover what it is that attracts students to schooling and learning so this may serve as a focus for compensatory programmes. More generally, the best hope for increasing retention at least, and both learning and retention at best, are the so-called 'alternative Year 12 programmes' being mounted in several states. While their success remains to be demonstrated, they seem to be doing all the things one would expect to have an influence on the educational preferences of young people.

Technical Section

THIS set ITEM is based on the data reported in *Participation in Education* published by ACER in 1987. It describes the participation in education of Australian youth during the years of the late 1970s and early 1980s. The information was gathered during the course of longitudinal surveys involving Australia-wide samples of youth. These samples, which involve several thousand individuals in each case (Table 1.), are four years apart in age, their members being born in 1961 and 1965 respectively. Broadly speaking, those of the older sample who completed Year 12 did so over the period 1977 to 1979, while Year 12 graduates in the younger sample completed secondary school during the years 1981-1983 – the 'class of '78' and the 'class of '82', so to speak.

Measures of Participation

Participation rates refer to participation in the several forms of education *by age 19*.

Changes in Participation

Since the two samples are four years apart in age each entered the various forms of education under a somewhat different set of social conditions; respectively, those of the late 1970s and those in force in the early 1980s. Differences in participation between the samples might well be attributed to changes in these conditions, the state of the economy in general and programmes of student assistance.

Group Differences

The study considered the way in which these participation rates differ across seven groups: father's occupation; family wealth; ethnicity; rurality; gender; school system; and State/Territory. It considered as well the variation in participation that accompanies past achievement within school and that which follows differences in the amount of schooling completed.

Table 1. Observed Participation Rates for Various Forms of Education, by Males, Females and Persons

	Class78/22			Class78/19			Class82/19		
	M %	F %	P %	M %	F %	P %	M %	F %	P %
Completed Year 12	34	37	35	34	37	36	34	40	37
Ever in post-secondary education	67	47	57	61	37	49	64	47	55
Ever in TAFE	43	24	34	42	17	29	44	20	31
Ever in apprenticeship	29	3	16	34	4	19	34	4	18
Ever in higher education	27	25	26	20	20	20	19	18	18
Ever in university	15	10	13	13	9	11	11	8	9
Ever in CAE	16	18	17	8	12	10	9	10	10
Ever in degree program	19	14	17	16	11	13	17	13	15
TOTAL N	1484	1388	2872	1700	1733	3433	1306	1544	2850

Notes:

a Class78/22 = % older sample ever in various forms of education by age 22 (1983).
Class78/19 = % older sample ever in various forms of education by age 19 (1980).
Class82/19 = % younger sample ever in various forms of education by age 19 (1984).

b The apparent anomaly in participation rates for apprenticeships which shows the Class78/22 rate as less than the Class78/19 rate is explained by reference to the confidence intervals of the two estimates (Table 1.2).

c Some double counting is involved as sample members may have enrolled in more than one form of post-secondary education.

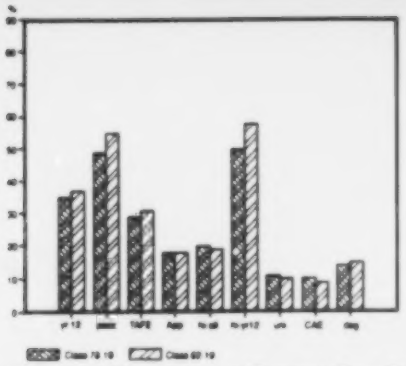


Figure 2 Percentage of Persons Ever Enrolled in Various Forms of Education by Age 19.

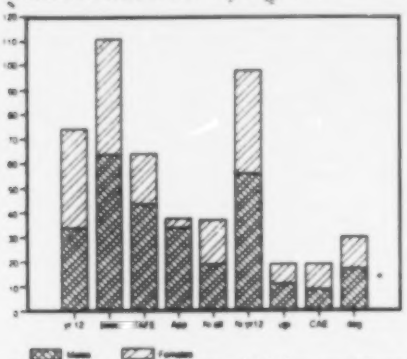


Figure 3 Percentage of Males and Females Ever Enrolled in Various Forms of Education by Age 19.

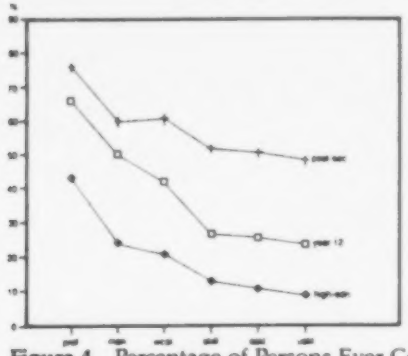


Figure 4 Percentage of Persons Ever Completed Year 12, Ever Enrolled in Post-secondary Education, and Ever Enrolled in Higher Education by Age 19, by Father's Occupation; 1981-1984 (Class 82/19)

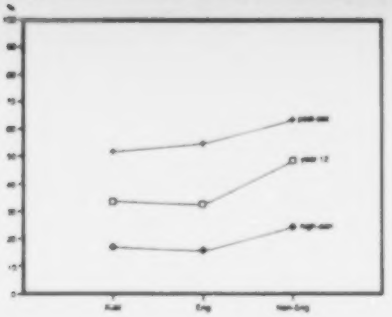


Figure 5 Percentage of Persons Ever Completed Year 12, Ever Enrolled in Post-secondary Education, and Ever Enrolled in Higher Education by Age 19, by Ethnicity; 1981-1984 (Class 82/19)

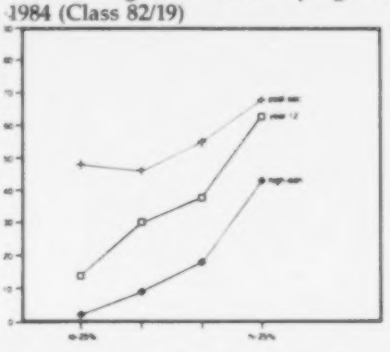


Figure 6 Percentage of Persons Ever Completed Year 12, Ever Enrolled in Post-secondary Education, and Ever Enrolled in Higher Education by Age 19, by Achievement Quartiles; 1981-1984 (Class 82/19)

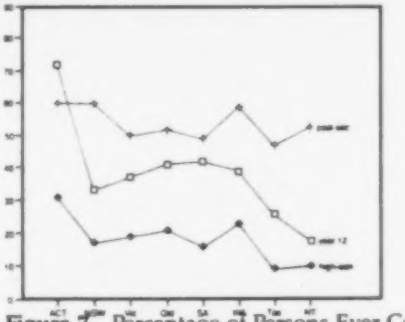


Figure 7 Percentage of Persons Ever Completed Year 12, Ever Enrolled in Post-Secondary Education, and Ever Enrolled in Higher Education by Age 19, by State/Territory of Residence; 1981-1984 (Class 82/19)

Equity

The question of equity was addressed through the estimation of adjusted rates. These adjusted participation rates are estimates of what the level of participation would be, 'other things equal'. The 'other things' in question derive from the person's status in other subpopulation groups and from individual achievements and attainments within school.

In contrast to the raw observed participation rates, these adjusted values allow one to attribute differences across the categories of any subpopulation group to the fact of membership in that group alone, the confounding effects of other attributes having been taken into account through statistical controls. This analysis is particularly important in reaching conclusions about the effects of wealth.

Gender Differences

As a fourth emphasis we take up the argument that the social processes underlying participation in education operate somewhat differently for males and females. That is, we take into account the possibility that the influence of, for example, family wealth on participation differs according to the gender of the person in question.

Notes

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The major report from which this set item is extracted is Williams, Trevor (1987) *Participation in Education*, Hawthorn: ACER.

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set
number two 1989

PATTERN NOTES:
A NEW LEARNING STRATEGY

By **David Jonassen**

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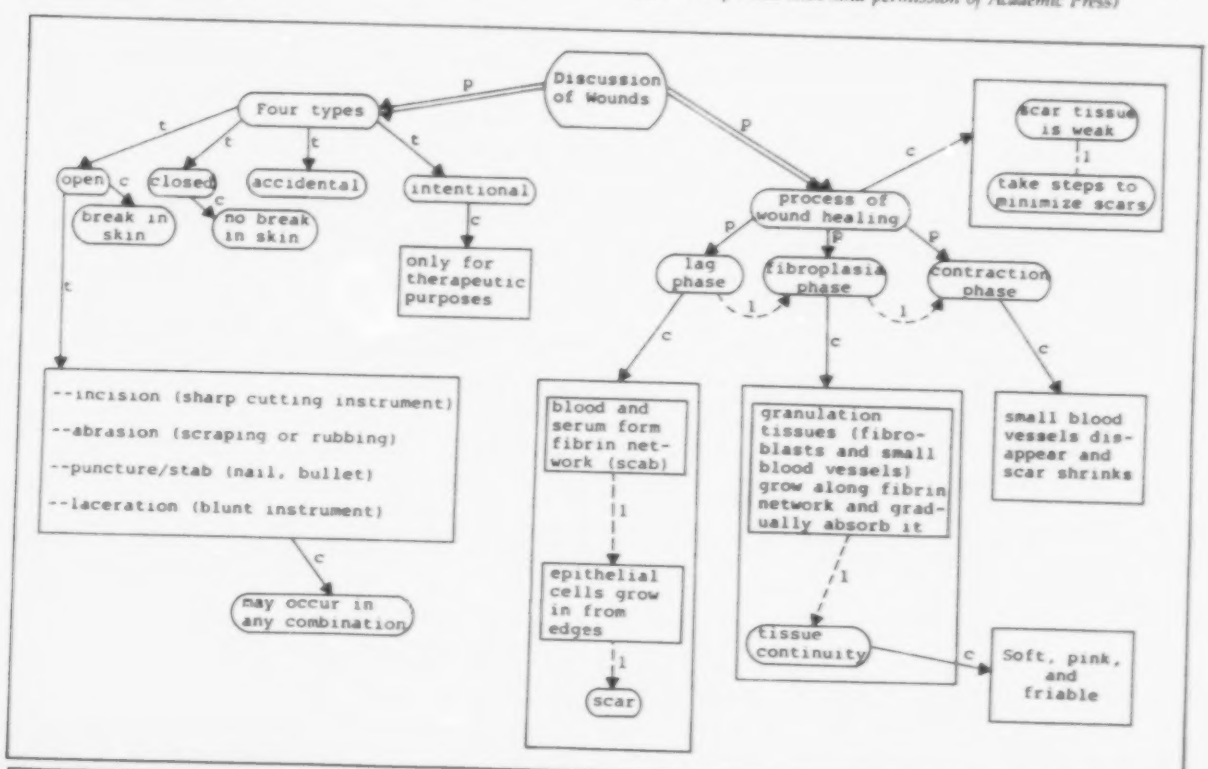
Introduction

INFORMATION becomes more meaningful as it is interrelated with what we already know. Learners may be helped to learn how new ideas should be fitted into their mental scaffolding through the use of learning strategies. Certain learning strategies enable learners to reproduce or *map* their own knowledge structures and insert new concepts into it in a way that is meaningful to them. Knowledge is personally constructed, so giving someone information we think they should know will not necessarily help him or her to acquire it. This item looks at two strategies that help learners organise what they are learning and a way of doing a deeper analysis on one of the strategies.

Networking

One of the most systematic, organizational learning strategies is that of *networking*. In building a network of ideas, the learner transforms material into node-link maps called networks (see Figure 1). The network is constructed to reflect the organization of information *in the material* (usually a unit from a textbook). Learning to use the networking strategy may take several hours. You learn to identify and paraphrase key ideas in the material and then

Figure 1. *Example of a network of a chapter in a nursing textbook (Holley et al., (1979) In* Contemporary Educational Psychology *4, 227-37. Reprinted with kind permission of Academic Press)*



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to organize them into one of four types of hierarchies. For instance, in Figure 1 the major discussion is about wounds. Discussions of the four types of wounds are *parts*. Therapeutic purpose is an example of a *characteristic* link as are the others marked with a 'c'. Open, closed, etc., are examples of *types* of wound, and so on. The learner is required to analyse the material to be learned, looking for its major concepts and the nature of the relationships between them. The result is a map of the organization of the ideas.

Networking represents a powerful organizational strategy. It assists learners to acquire and interrelate main ideas, but does not generally facilitate the acquisition of details. The only significant drawback is the amount of time required for training (several hours) and that the strict structure makes learners look for concepts to fit certain types of relationships, ignoring others that do not fit. Often the 'extra' associations that do not fit are the most meaningful. An alternative strategy to networking is *pattern noting*.

Pattern noting

Our minds, without conscious effort, aggregate knowledge in patterns. This makes the knowledge more meaningful and accessible. But, the networks of associations that are formed are *heterarchical*, not hierarchial. Some ideas are interrelated hierarchically, yet many more are interrelated in sequences, in time (first to last), by function (because one causes other), etc.

What we know may be organised in our minds in a network, but we almost invariably represent information (notes, lectures, outlines, etc.) in a linear fashion. A more accurate reflection of the arrangement of ideas in memory needs a network diagram of some kind. A popular and well-established technique for doing this is *pattern notes*.

How to Generate Pattern Notes

1. *Identify the main topic.* Start with a blank sheet of paper, a chalkboard, or other display surface. Clarify the main topic for consideration. What is the most essential concept being considered? This may be the skill you are analyzing or the main content area that you are inventorying. Write that topic in the middle of the page and draw a box around it.

2. *Identify primary issues.* Now clear your mind. On the back of the sheet of paper or on the edge of the page, quickly write down the first five to ten things that come to your mind when you think of the main topic. This is a free association task. Select the more important of these related topics. Which are the key issues related to the main topics? Write those words alongside or around the topic. Draw a line underneath each issue joining it to the main topic. Can you think of additional topics?

3. *Identify subissues.* Repeat step 2 for each of the issues. That is, for each issue, write down a list of words, check them, and then draw a line underneath each word and connect it to the end of the line underneath the issue.

4. *Identify sub-subissues.* Repeat step 3 for each of the subissues that you can think of. Decide if your pattern needs more development or elaboration. If you have not adequately described the subject domain, add additional layers of detail.

5. *Compare the issues, sub-issues, and sub-sub-issues with each other.* See if there are interlinkages. That is, are words in different parts of the pattern related to each other? If they are, draw lines between the words.

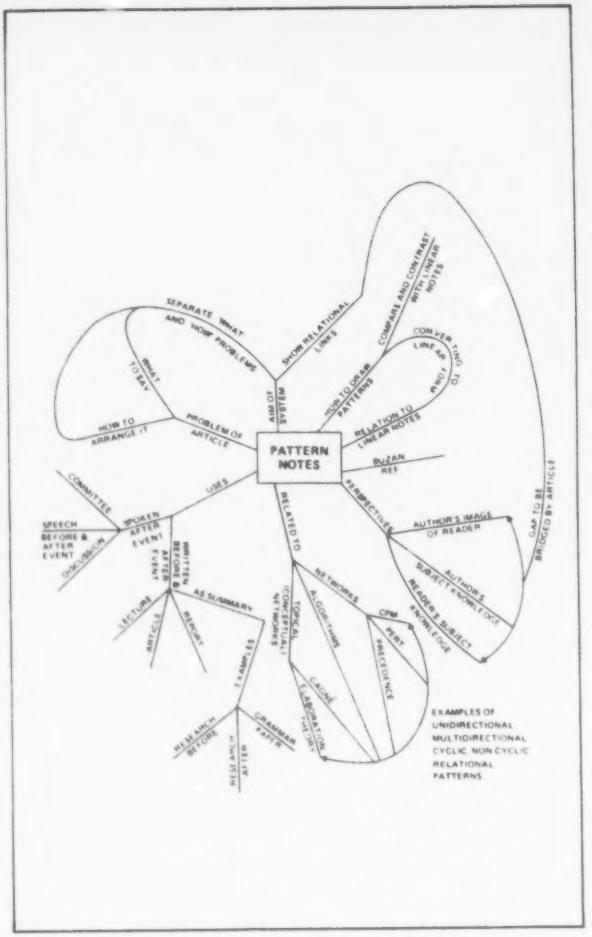
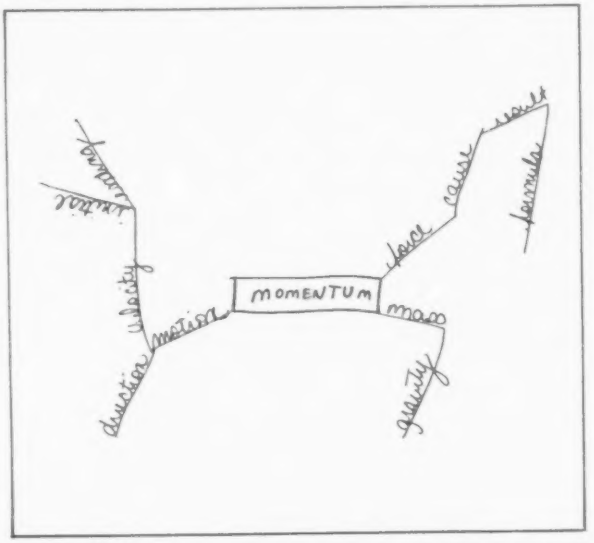


Figure 2. Pattern note on pattern notes (Fields, 1982. Reprinted with kind permission of Educational Technology Publications)

Examples of Pattern Notes

Pattern notes can be generated for any topic. Figure 3 is a pattern note on the concept 'momentum' developed by a high school physics student.

Figure 3. *A student's first pattern note of physics concept 'Momentum'*



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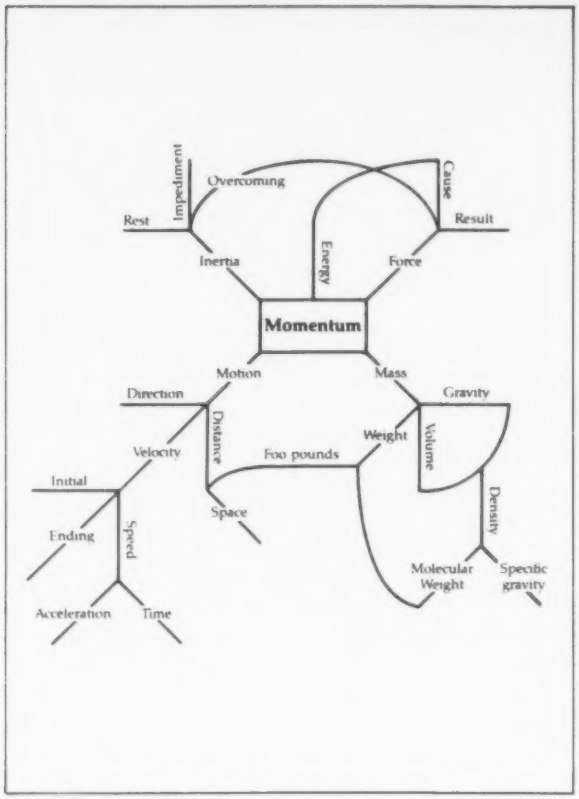


Figure 4. *Pattern note of the concept 'Momentum' elaborated*

Advantages of Pattern Notes

1. Secondary ideas, those related to the main ideas, are not necessarily subordinate to them and this is how they appear in the pattern note.
2. The relationships of ideas shown in the pattern note depends upon the unique arrangements of ideas in each individual's memory.
3. The spatial distances between ideas on the pattern (as measured by the number of intermittent links between ideas) are roughly equivalent to the *semantic* distances between concepts or scheme, how 'far apart' the meanings are, in memory. For instance, the concepts of 'discussion' and 'lecture' (only three links from each other in Figure 2) are more closely related in the mind of the author of the pattern note than the concepts of 'discussion' and 'grammar' (five from each other).
4. The technique can be learned very quickly, in a matter of an hour or so, by a greater variety of learners. I have successfully taught elementary students through to graduate students to make pattern notes. Proficiency depends on practice, but the principles and procedures are assimilated quickly.
5. The main idea is clearly defined and explained by related ideas.
6. The relative importance of each idea to the person is spatially identified.
7. The relationships (links) between concepts are clearly recognizable.
8. It improves recall and the retrieval of information.
9. It reflects the individual arrangement of ideas.
10. It is a useful instructional strategy for introducing new content.
11. It is a simple technique, easier to use than other mapping techniques.

Uses of pattern notes

Study skills

Pattern notes have a variety of applications. They were originally conceived as a note-taking aid to replace or supplement traditional linear notes. As such, they can be used to take notes from text, lectures, discussions and so on. However, they are, perhaps, most effectively used as recall and review aids. Creating pattern notes from linear verbal notes is very likely to increase the number of access points in memorizing specific ideas. Organizing ideas for a paper, speech or presentation is also a productive use of pattern notes for overcoming the difficulty of 'getting started'. The most difficult part of preparing any sort of report is arranging the ideas. Pattern notes can help.

Limitations

Firstly, non-spatial thinkers do find pattern noting difficult. Secondly, while pattern notes represent a useful strategy, they tell only part of the story. What they show are associative links between concepts, so we know the arrangement of ideas in memory but nothing about the nature of the relationship, except that which can be inferred from the link. In order to become a useful learning strategy, the nature of the links needs to be explored, especially since pattern notes include a variety of structural relationships.

If pattern notes depicted hierarchical relationships only, this analysis would be less important. Because a variety of structures can be represented by pattern notes, knowing their nature is essential to understanding the structures. To explore the arrangement of ideas fully older learners can analyse the nature of the relationships. The following set of procedures should help further in analysing the content of learning materials and reviewing what one knows.

Semantic analysis of pattern notes

Procedure

The analysis begins by asking those learners who have made a pattern note to run through a list of questions about each linking line in the pattern note. While children as young as ten (and perhaps younger) can be taught to prepare pattern notes of a kind, semantic analysis of those notes as described by this technique will probably be effective only for learners in the final years of high school and at college. An hour or two of practice with the algorithm is usually enough to enable learners to make immediate classifications without frequent reference to it.

Mapping cognitive structure

Another application of pattern notes is as a tool for mapping a person's arrangement of semantic memory, i.e., his or her cognitive structure. In a recent study, the structural arrangement of pattern notes was compared with the structural interrelation of concepts generated by a word association task, traditionally the most accurate measure of cognitive structure. High school physics students completed a word association task of 14 major concepts in Newtonian physics. They were then taught, over a period of two hours, how to prepare pattern notes and then made pattern notes for each of the concepts used as stimuli for the word association tasks. Using a statistical procedure, known as multi-dimensional scaling, to compare the relationships resulting from the word associations and the distances between concepts on the pattern notes, the

solutions showed a very high degree of structural isomorphism with commensurately high correlations, indicating a high degree of overlap. The plots or maps of the solutions were nearly identical. It was concluded that pattern notes can represent cognitive structure. Pattern noting is an efficient and easily learned means of mapping the semantic relationships between ideas in a learner's memory.

Implications for Teaching

Because pattern notes can represent the pattern of relationships in parts of semantic memory (cognitive structure), there are many instructional applications.

1. *Assessing prior knowledge structure.* The structural complexity of prior knowledge can be more accurately represented by a pattern than by a pre-test. When you are deciding how to teach a topic you need to determine what schemata the learner has already. Most other means for doing so are very time-consuming, expensive, and statistically complex. Guesswork is unreliable. Pattern notes offer an efficient alternative.
2. *Diagnostic tool.* If you know the extent of a learner's knowledge about a subject you can work out not only at what level to begin but also with what concepts to begin, and how to relate them to what the learner already knows.
3. *Remediation.* Interpreting results after teaching can be facilitated by the addition of a pattern note. Being able to see gaps or holes in a pattern tells you where the gaps are in the learner's background, and so what is needed to remedy the situation.
4. *Mediator of instruction.* Knowing what associations someone makes provides the teacher with anchoring points for new information. You can easily then build customized, advanced, comparative organizers for anchoring new ideas.
5. *Content organizers.* Using content structure maps, (network or pattern notes) teachers can point out the relationships between concepts. This is teaching structural knowledge (too seldom done). It enhances essay test scores and students' ability to make relationship judgements similar to the teachers.
6. *Task analysis.* Patterns are a simplified alternative to traditional concept-hierarchy analysis, and one of the three basic, alternative methods of task analysis.

Procedural differences

In other mapping strategies, such as networking, concepts (nodes) come first and then lines (links) connecting them. Pattern notes require the learner to write the ideas on the lines; the links are represented by the intersection of the lines. So, at each intersection, learners use the algorithm to identify the relationship between the intersecting ideas. They then write an appropriate symbol, (shown in Figure 5) next to the intersection. This form of visual shorthand is necessary to avoid clutter on the pattern. Figures 6 and 7 show the results of two semantically analysed patterns. Figure 7 illustrates the analysis of Figure 2, and Figure 6 shows an analysis of the pattern note (Figure 3) produced by a high school student during the experiment described earlier.

Applications

Pattern noting and analysis are normally performed individually by each student after reading textual material or seeing an instructional film or video, etc. The process can also succeed as a group activity, that is, as the focus of a classroom discussion. In fact, until each learner is proficient with the strategy, it is instructive and beneficial to the students to work through the process together. This will result in some convergence in the first few patterns, but that will soon disappear after the students begin to construct them individually. A comparison of analysed pattern notes can function as an excellent review session prior to an examination. Comparing student patterns with the teacher's will encourage structural thinking more congruent with 'expert opinion'. Discussions of structural knowledge will encourage structural thinking, as opposed to rote memorization. Take care that comparisons do not result in a single 'true' or 'correct' or 'received' pattern. Each pattern displays how that particular person is thinking. Thinking structurally is the aim, not memorising patterns.

Figure 5. *Quasi-algorithm for semantic analysis of pattern notes*

Relationship	Algorithm IF	Symbol THEN USE
Equivalence	Are they the same? Is one merely another term for the other?	=
Similarity	Is one similar to the other?	≈
Different/opposite	Are they different from or opposite to one another?	≠
Characteristic	Does one describe or *identify* a characteristic of the other?	ID
Example	Is one an *example* of or type of the other?	Eg
Subsumption	Is one a *part* of a larger or more general *whole*?	P/W
Class commonality	Is one another example of the same class or concept (not the same meaning)?	Eg2
Sequence/procedure	Does one follow the other in a sequence or procedure?	→
Causality	Does one cause, lead to or result from the other?	⇒
Confirmation	Does one support, document, or provide evidence for the other?	∴

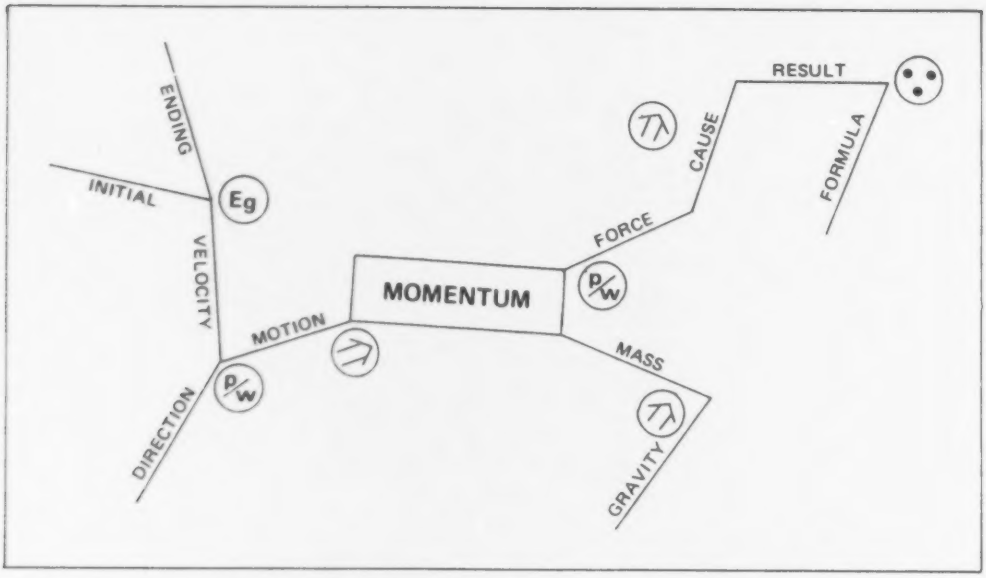
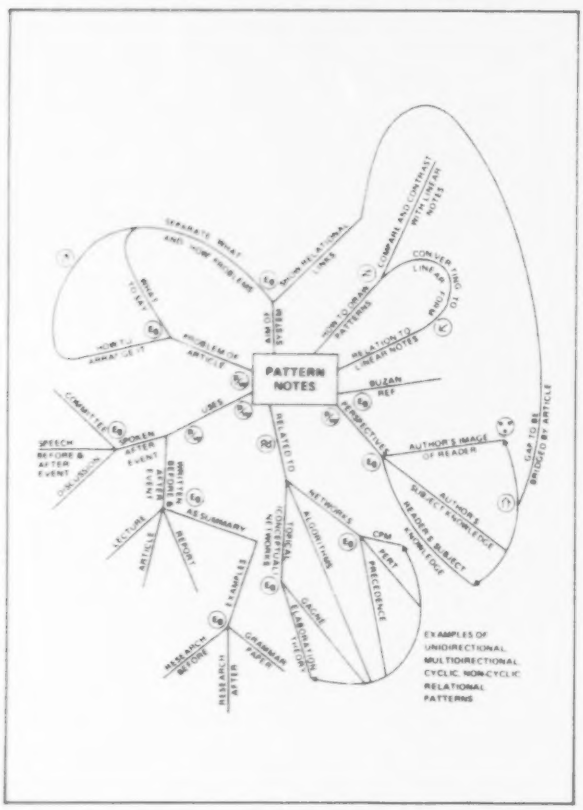


Figure 6. *Students' pattern note with semantic analysis (see fig. 3).*

Some teachers recommend pattern noting during lectures and presentations or while reading. For many students, doing this would be very distracting. It is difficult for them to divide their information processing between attending to and interpreting. Making a visual representation of the interpretation is yet another extra step. For most learners, I have found it useful to complete pattern notes and semantic analysis after reading or listening. Linear notes taken during a lecture, or underlining put into a text, can be the major source of concepts for the patterns. A recommendation to divide your notebook pages, using the right side for linear notes and the left for *post hoc* pattern noting, seems especially effective. If you teach this strategy, the intermediate step of selecting key words is critical.

Many students find it most useful to take linear notes from text or lectures and then highlight or underline the key terms in those notes. They then used the key terms to construct pattern notes which they then analysed. Students will ultimately formulate their own strategies, those which they find most comfortable, once any training is completed. It is difficult to replace the habit of rote and shallow copying of text *or* excessive highlighting of the bulk of text. The most difficult task of all is convincing learners that a strange set of study skills that requires more work is worthwhile.

Figure 7. Semantically analysed pattern notes from figure 1.



Synthesis

The semantic analysis breaks down the content or memory into individual units or associations. However, since much of memory *is* hierarchically arranged, it is useful to do some rebuilding, that is, to look for patterns in the semantically analysed pattern notes. In looking for more generic relationships in pattern notes, one method is simply to draw circles (preferably using an alternate colour of ink) around related chunks of the pattern note. Then link them up. Add new 'main' headings. But beware, as this is a difficult task for many learners, particularly those who do not possess analytical learning styles. Many will find this a frustrating task.

Benefits

The benefits of semantic analysis result from a deeper processing of information as well as the additional 'investment of mental effort'. Many students have indicated at the conclusion of exams that 'it really works'. But there is a possible drawback: in courses where verbatim recall and factual learning are emphasised, Holley et al. found that while the learning strategy of networking improved learning of main ideas, it actually depressed recall of details among higher achieving students. Point out this to your students. The emphasis of the pattern noting/semantic analysis strategy is on structural knowledge, not verbatim recall.

The identification and interrelation of ideas reflect both how memory works and the basis for higher level mental processing, the goal of most institutions of learning.

Notes

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This item owes much to two earlier articles on the same subject
Jonassen, David H. (1984) Developing a Learning Strategy Using Pattern Notes: a New Technology', *Programmed Learning and Educational Technology*, Vol. 21, No. 3.

Jonassen, David H. 'Pattern Noting' in Jonassen, D.H., Hannum, W.A., and Tessmer, M. (1989) *Handbook of Task Analysis Procedures*, NY: Praeger.

The diagrams are reprinted by permission.

Diagram 1: Network of a chapter in a nursing textbook Holley, C.D., Dansereau, D.F., McDonald, B.A., Garland, J.C., Collins, K.W. (1979) 'Evaluation of a Hierarchical Mapping Technique as an Aid to Prose Processing'. *Contemporary Educational Psychology*, Vol. 4, pp. 227-37. Reprinted by kind permission of Academic Press.

Diagram 2: A Pattern note on pattern notes
Fields, A. (1982) 'Getting Started: Pattern Notes and Perspectives'. In Jonassen, D.H. (ed.) *The Technology of Text: Principles for Structuring, Designing and Displaying Text*. Englewood Cliffs; NJ: Educational Technology Publications.

Diagram 3: A Student's first pattern note for physics concept: 'Momentum' Jonassen, D.H. (1987) 'Assessing Cognitive Structure: Verifying a Method Using Pattern Notes'. *Journal of R. earch and Development in Education*, Vol. 20, No. 3.

Diagram 4: Pattern note of the concept 'Momentum' elaborated Jonassen, D.H. et. al (1989) *Handbook of Task Analysis Procedures*, see above.

Diagram 5: Quasi-alogrithm for semantic analysis of pattern notes, Jonassen, D.H. in *Programmed Learning and Educational Technology*, Vol. 21, No. 2, see above.

Diagram 6: Student's pattern note with semantic analysis, as above.

Diagram 7: Semantically analysed pattern note from Fig. 2, as above.

The best account of the networking technique is found in
Dansereau D.F. (1978) The Development of a Learning Strategy Curriculum. In O'Neil, H.F. (ed.) *Learning Strategies*. Academic Press, New York.

That networking works is seen in research detailed in
Dansereau, D.F., Collins, K.W., McDonald, B.A., Garland, J., Diekhoff, G.M. and Evans, S.H. (1979) Development and Evaluation of a Learning Strategy Program. In *Journal of Educational Psychology*, Vol. 71, pp. 64-73.

That networking helps learners with the main ideas but not necessarily with details is shown in

Holley, C.D., Dansereau, D.F., McDonald, B.A., Garland, J.C. and Collins, K.W. (1979) Evaluation of a Hierarchical Mapping Technique as an Aid to Prose Processing. In *Contemporary Educational Psychology*, Vol. 4, pp. 227-37.

Pattern notes were developed by Tony Buzan, and called by him brain patterns. His explanation of the technique can be found in
Buzan, T. (1974) *Use Your Head*. British Broadcasting Corporation, London.

That spatial distance in pattern notes is roughly equal to distance in meaning (to the person) is consistent with the rules of formal systems of mapping. See, for example
Harary, F., Norman, R.Z. and Cartwright, D. (1965) *Structural Models: An Introduction to the Theory of Directed Graphs*. John Wiley, New York.

That creating pattern notes from linear notes is likely to increase access points in memory is in accord with the encoding variability hypotheses in
Craik, F.I.M. and Tulving, E. (1975) Depth of Processing and the Retention of Words in Episodic Memory. In *Journal of Experimental Psychology: General*, Vol. 104, pp. 268-04.

The difficulty of 'getting started' is helped by pattern notes. See
Fields, A. (1982) Getting Started: Pattern Notes and Perspectives. In Jonassen, D.H. (ed.) *The Technology of Text: Principles for Structuring, Designing, and Displaying Text*. Educational Technology Publications, Englewood Cliffs, NJ.

A full description of the experiments which show pattern notes to reflect cognitive structure is in
Jonassen, D.H. (1987) 'Assessing Cognitive Structure: Verifying a Method Using Pattern Notes'. *Journal of Research and Development in Education*, Vol. 20, No. 3.

That teaching structural knowledge enhances essay test scores and brings students' and teachers' judgements closer is maintained in
Diekhoff, G.M. (1977) The Node Acquisition and Integration Technique: a Node-link Based Teaching Learning Strategy. Paper presented at the annual meeting of the American Educational Research Association, New York, April. (ED 138 570.)

Pattern notes offer a technique immensely easier than Diekhoff's.

Twenty-seven alternative methods of task analysis are given in
Jonassen, D.H., Hannum, W.H. and Tessmer, M. (1989) *Handbook of task analysis procedures*, NY: Praeger.

The technique of using two sides of a notebook page is that of Tony Buzan.

Holley et al's discovery about fitting pattern notes to the type of learning to be done is found in their work mentioned above.

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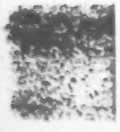

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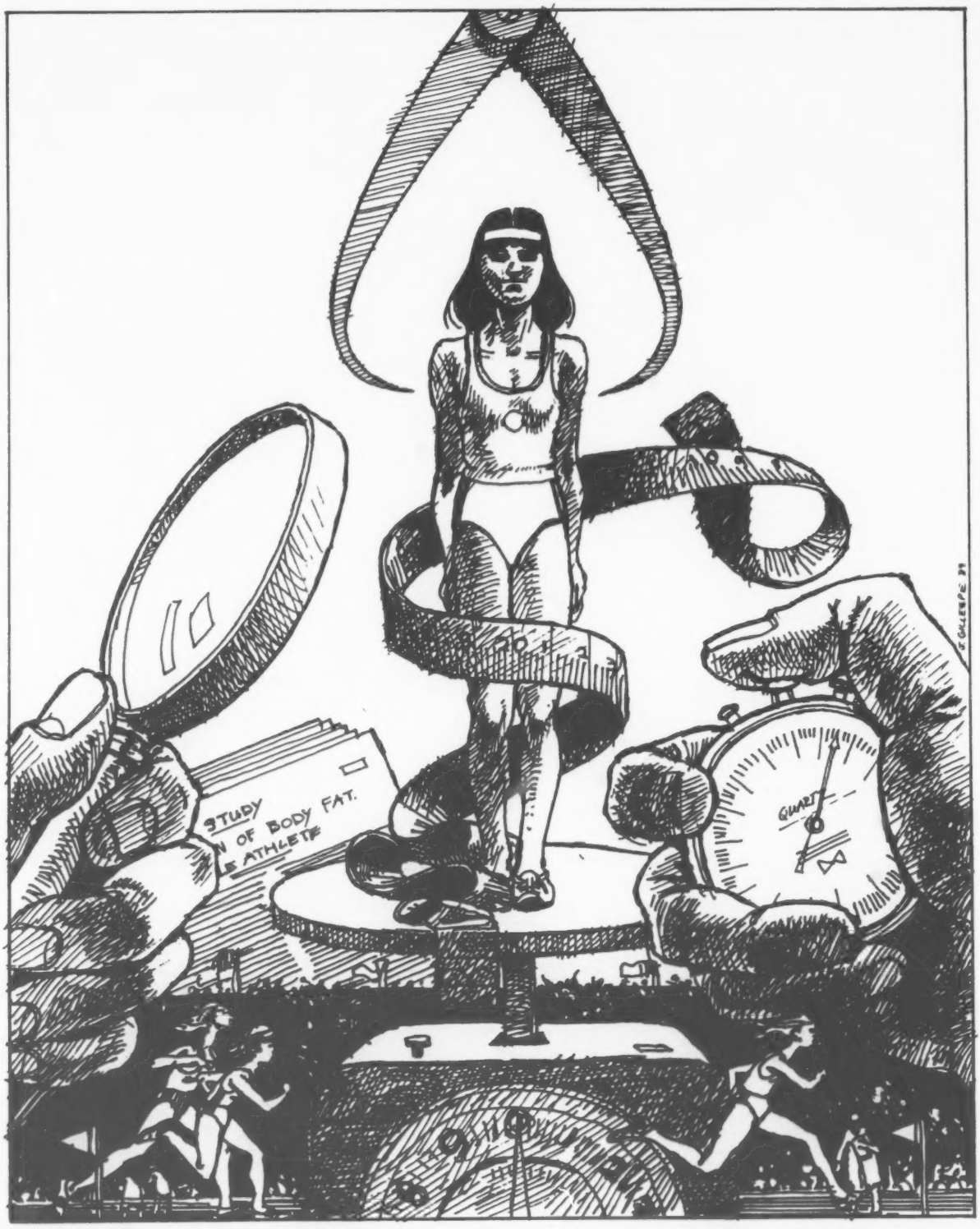
number two 1989

The Female Athlete

By Jack H. Wilmore
University of Arizona



John Gillespie

WHILE FEMALES have competed successfully in athletics for many years, the athletic arena has traditionally been the domain of the male. During the early 1970s, female athletics underwent a dramatic revolution. Demands were made for equality in budget, facilities, equipment, coaching, and competitive opportunities to gain a status or position in the world of athletics comparable to that enjoyed by the male. While the demands for equal opportunity were generally attended to, with moderate to major reluctance, the demand by some females that traditionally all-male sports be integrated with females was met with heated discussion and debate. Out of this controversy repeatedly surfaced the questions: Are female athletes generally inferior to male athletes with regard to both physical and physiological characteristics? Were the sexes created equal relative to their potential athletic ability? These questions and their answers have important implications not only for the athletic world, but also for many areas of employment in which physical performance characteristics are critical. Can females perform the duties of a fireman, a police patrolman, a commercial airline pilot, a telephone lineman, or similar occupations requiring unusual physical demands?

By looking at the record books, it is apparent that the female athlete performs at a substantially lower level than her male counterpart for almost all athletic events or contests. On the basis of world records in the year 1974, the male was 11.1% faster in the 100-yard dash, jumped 19.9% higher in the high jump, ran 14.0% faster in the mile run, and swam 7.3% faster in the 400-metre freestyle swim. Do these represent true biological differences between the sexes or do these differences reflect the social and cultural restrictions that have been placed on the female during her preadolescent and adolescent development? This paper will focus on similarities and differences between males and females in those areas that directly influence athletic performance. Of primary concern will be the areas of body build and composition, strength, cardio-vascular endurance capacity, and motor skill development and athletic ability.

Body Build and Composition

That the mature male and female differ with regard to body build and composition does not require scientific validation. However, even in the mature adult, the differences which presently exist between the male and female are considerably greater than they need to be. At the time full maturity is reached, the average female is 125 mm. shorter than the average male, 15 to 25 kg lighter in total weight, 20 to 25 kg lighter in lean body weight, and considerably fatter, i.e., 25% vs. 15% relative body fat. Up to the age of 13 or 14 years, however, the average female is either equal to or greater than the average male in both height and weight. This is undoubtedly due to the earlier maturation of the female. Once full maturity is reached, the male is characterised by broader shoulders, narrower hips, and a greater chest girth relative to his total body size. With reference to absolute values, the male has a greater amount of subcutaneous fat in the abdominal and upper regions of the body, while the female carries substantially more fat in the hips and lower regions of the body. The female's hips are equal in width to males, even though the width of other bones and areas are, on average, 10% or greater in the male. Equal girth measurements are also found for the two sexes at the abdomen, hips, and thigh. Additionally, the physique of the average female, on the basis of somatotype, tends more toward endomorphy or fatness, where the average male tends to be more linear (ectomorphy) and muscular (mesomorphy).

In body composition, the 18- to 22-year-old female will average between 22% and 26% relative body fat, while the male of similar age will average between 12% and 16% relative body fat. These differences are the result of both a lower absolute lean and a higher absolute fat weight in the female. Whether these differences are primarily biological or genetic in nature or whether environmental and cultural factors are of major importance is not clearly understood at the present time, but evidence is now available to demonstrate that each of these is important and makes a significant contribution to the total differences observed.

The higher levels of the androgen hormones in the male are undoubtedly responsible for his possessing a greater lean body weight. Similarly, the higher levels of the estrogen hormones in the female are at least partially responsible for the greater amount of fat weight in the female. The mature female has higher amounts of essential fat due to the fat in breast and other sex-specific tissue. The significant question that needs to be answered relates to how much additional fat the female should be allowed to possess. At what point does this additional fat become nonessential, where athletic performance will be limited by the excess fat?

It is difficult to design a research experiment to answer these questions; however, insight into the problem is gained by observing the relative body fats of national and world class athletes whose sport, event, or activity requires speed, endurance, and mobility. Figure 1 illustrates the relative body fat values for a large number of track and field athletes. While the values are highly variable for the group as a whole, close inspection of the data reveals that the runners were considerably leaner than those competing in the field events. Of the 78 runners evaluated, 12 had relative fat values under 10%, and 32 had values under those of the college-age male (15%). Costill, Bowers, and Kammer reported an average value of 7.5% fat for 114 male competitors at the 1968 United States Olympic marathon trial. Two of the women in Figure 1 had values of approximately 6% fat, and one of these two had initially started running because she was considered obese and wanted to use exercise in addition to diet to reduce her weight to a more normal level. She became enthused with her running programme, expanded it, and became a world-record-holding long-distance runner.

While the low relative body fats for these runners may be largely the result of their inherited constitution, the previous illustration would suggest that the high-intensity endurance type of exercise engaged in by these female athletes is also a most significant factor. Training at distances of up to 100 miles or more per week requires extraordinarily high levels of caloric expenditure. Thus, it appears that the female athlete can approach the relative fat values observed in male athletes, although considerably more research will be necessary to confirm this conclusion. In addition, it would seem that the average values of relative fat for the fully mature female are considerably above what might be considered ideal. The sedentary lifestyle acquired by the average female once she reaches puberty undoubtedly accounts for these comparatively high values. Likewise, it is difficult to justify the extraordinarily high values of the few female shotputters illustrated in Figure 1. These values should not be interpreted as essential for success in this event.

Body composition of the female athlete varies considerably with the sport in which she is participating. Parizkova and Poupa reported a mean value of 9.6% relative fat for highly trained female gymnasts. Sinning and Lindberg reported a mean value of 15.5% for college-age female gymnasts. In a separate study, Sinning found female basketball players to average 20.8% relative fat, while we have found female swimmers to average 29.6%.

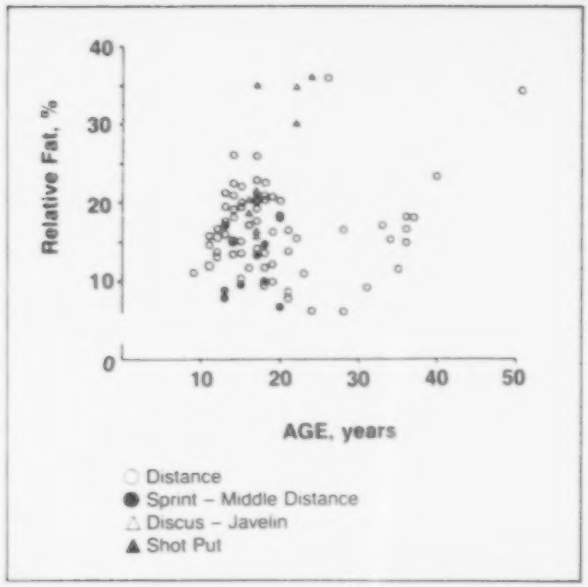


Figure 1 – Body composition values of female track and field athletes.

Strength

It is well recognised the average male is considerably stronger than the average female. Composite strength scores from several different studies suggest that men are approximately 30% to 40% stronger than women. Even at the younger ages of 7 through 17 years, while the values are relatively close, the female is unable to exhibit the same level of strength. These results are somewhat misleading, however, for when individual values are considered for specific areas of the body, it is interesting to find that leg strength is nearly identical in the two sexes. When expressed relative to body size, leg strength is identical, and when expressed relative to lean body weight, to more accurately reflect muscle mass, the females are slightly stronger! With reference to upper body strength, however, the females' values are only 30% to 50% of the values attained by the males.

Can females benefit from strength-training exercises? Several studies have confirmed that weight training in adolescent and college-age women can produce significant gains in strength in each of the areas trained. Brown and Wilmore reported bench press strength of 52 to 85 kg and leg press strength of 98 to 257 kg in seven nationally ranked female track-and-field throwing-event athletes, five of whom had just completed a 6-month intensive weight-training programme. These values are considerably greater than those reported for normal, untrained males of similar age but well below values reported for male weight lifters. In a recent study, Wilmore has demonstrated that the mean strength of young, nonathletic women can be improved by as much as 30% through a 10-week weight-training programme. Some of the women in this study doubled their strength in selected areas during this relatively short training period. In comparison with a group of nonathletic young men on an identical programme, these women exhibited greater gains in strength, although their initial values were lower.

From this, it appears that the female has the potential to develop substantially higher levels of strength, considerably higher than those normally identified in the average, typically sedentary female. Yet, while strength training does produce large increases in the female's total body strength, it does not appear to result in concomitant gains in muscle bulk. This is an important point, since most female athletes would like to increase their basic levels of strength but would be quite unwilling to strength train if they suspected they would develop excessively large, bulky muscles. The inability of the average female to gain substantial amounts of muscle with strength training is undoubtedly due to their relatively low levels of testosterone circulating in the blood, compared to the average male. Some females will notice an increased bulkiness accompanying their strength training, but it is felt that they probably have naturally high testosterone levels and probably exhibit other masculine characteristics.

Will the female ever be able to attain the same levels of strength as the male for all major regions of the body? From the similarity of the strength of the legs in the two sexes, it appears that the quality of muscle is the same, irrespective of sex. Because of the higher levels of testosterone in the male, however, he will continue to have a larger total muscle mass. If muscle mass is the major determinant of strength, the male will always have a distinct advantage. If the levels of strength one can express are independent of muscle mass, the potential for absolute strength may be similar between the sexes. Since the basic mechanisms allowing the expression of greater levels of strength have yet to be defined, it is impossible to draw any conclusions at the present time.

Cardiovascular Endurance

In general, the female has a smaller stroke volume than the male for an equivalent submaximal level of work. She is able to partially compensate for this by increasing her heart rate response to that level of work. This lower stroke volume is at least partially related to her smaller body size. Another important factor to the female is her lower blood hemoglobin concentration when compared to the male. Several studies have suggested that females may have values as much as 10% lower than males of the same age. With a lower maximal stroke volume and a similar maximal heart rate (which reduces the maximal cardiac output potential), in addition to lower hemoglobin levels, the oxygen carrying and delivery capacity in the female is apparently reduced considerably when compared to the male. This should result in a substantial difference in endurance capacity between the sexes, since maximal oxygen uptake (VO_2 max [the best physiological index of cardiovascular endurance capacity]) should be much lower and the relationship between endurance capacity and VO_2 max is very high. VO_2 max values for males and females are quite similar until 10 to 15 years of age. Beyond this age, however, the female decreases rather markedly, while the male continues to improve. For the college-age male and female, this difference is quite large, with the female exhibiting a mean VO_2 max between 30 and 44 ml/kg·min, while the mean value for males ranges between 45 and 53 ml/kg·min. These differences would tend to agree with, and be partially explained by, the physiological observations previously noted relative to the female's reduced maximal cardiac output and reduced hemoglobin levels. The lack of an observed difference in VO_2 max at the younger ages is probably due to similarities in maximal cardiac output and hemoglobin levels up to the age of puberty, at which point these differences start to appear.

While this discussion appears to have resolved this entire area of cardiovascular endurance capacity, recent research has indicated that the female's endurance capacity at the ages beyond 10 years need not be reduced, nor be substantially below that of the male for each age. Hermanson and Anderson investigated the endurance capacity of both sedentary and athletic college-age populations and found the athletic men and women have VO_2 max values of 71 and 55 ml/kg·min, respectively, compared with values of 44 and 38 ml/kg·min, respectively, in the sedentary men and women.

While the athletic men were noticeably superior, the athletic women had values 25% greater than the sedentary men.

Wilmore and Brown investigated cardiovascular endurance capacity in highly trained female endurance athletes at various ages up to and including the fourth decade of life. Eleven subjects of national and international calibre were selected from a population of female distance runners. One of these girls had won five consecutive United States and International Cross Country Championships. Another held the best world time for females in the marathon, and a third held the best world time for females in the 50-mile run. The average VO_2 max value for this group was 59.1 ml/kg·min, which is considerably higher than those values for average women or men of similar age. National-calibre male long-distance runners studied by Costil and Winrow averaged 70.3 ml/kg·min, or some 15.9% higher than those women. However, taking the three best runners from the above 11 women, they averaged 67.4 ml/kg·min, or only 4.1% lower than the average for the 10 nationally ranked male marathon runners of almost exactly the same age.

Figure 2 demonstrates the range of values for young and older female distance runners compared to average values for the untrained male and female. It is obvious that the female has the potential to possess levels of endurance far greater than she normally demonstrates. When VO_2 max is expressed relative to the athlete's lean body weight rather than body weight, the female athlete is nearly identical to the male athlete. Davies found that when the VO_2 max was expressed relative to the actual active muscle mass, the differences between the sexes disappear entirely. While this may imply that men and women have the same endurance potential, Drinkwater makes the important observation that the woman must still carry her entire body weight with her as a part of her total workload in most activities. This would undoubtedly hinder her actual performance. However, this would not be a factor in an activity such as bicycling, which should provide the female with a more equal opportunity to compete against males.

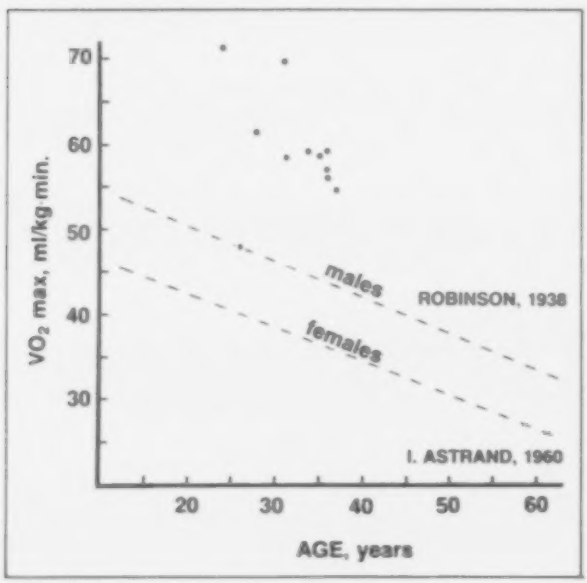


Figure 2 VO_2 max values for female distance runners compared to normal untrained males and females. Normal male values obtained from S. Robinson, 'Experimental Studies of Physical Fitness in Relation to Age'. *Arbeitsphysiologie*, 1938, **10**, 251–323. Normal female values obtained from I. Astrand, 'Aerobic Work Capacity in Men and Women with Special Reference to Age'. *Acta Physiologica Scandinavica*, 1960, p. 169. (Supplement)

Motor Skills and Athletic Ability

With the exception of one activity, the softball throw for distance, boys and girls are quite similar in their performance of physical activities up to the age of 10 to 12 years. Tests of specific motor skills or general athletic ability show few differences between the sexes during this period of development. Past the age of 12, however, the male becomes considerably stronger, possesses greater muscular and cardiovascular endurance, and becomes more proficient in almost all motor skills.

It is interesting to note that, at all age levels, the female lags far behind the male in the softball throw, the female throwing only half the distance of the male, since the sexes are identical up to age 10 to 12 years for all other motor skills. In an unpublished study, Gromditch and Sockolov investigated possible reasons as to why the female does so poorly in the softball throw. Postulating this difference to be the result of insufficient practice and experience, they recruited over 200 males and females from 3 to 20 years of age to throw the softball for distance with both the dominant and nondominant arms. As they had theorised, there was absolutely no difference between the males and females for the nondominant arm up to the age of 10 to 12 years, similar to the results for other motor skill tasks. The results for the dominant arm were in agreement with what had been reported previously. When the influence of experience and practice was removed by using the nondominant arm, this motor skill task was identical to each of the others.

Athletic performance differences were briefly discussed in my introduction. The female is outperformed by the male in almost all sports, events, or activities. This is quite obvious in such activities as the shotput in track and field, where high levels of upper body strength are critical to successful performance. The female uses a shot 55% lighter, and yet the world record for the female is still some .46 m shorter in distance when compared to the male. In the 400-metre freestyle swimming, however, the winning time for the men in the 1924 Olympic games was 16% faster than for the women, but this difference decreased to 11.6% in the 1948 Olympics and to only 7.3% in the 1972 Olympics. The fastest female 400-metre freestyle swimmer in the early 1970s was swimming faster than the world record-holding male for the same distance in the mid-1950s. Therefore, in this particular event, the gap between the sexes is narrowing, and there are indications that this is also true for other events and for other sports. Unfortunately, it is difficult to make valid comparisons, since the degree to which the sport, activity, or event has been emphasised is not constant, and factors such as coaching, facilities, and training techniques have differed considerably between the sexes over the years. While the performance gap appears to be closing, it is far too early to predict whether it will ever close completely for any or all sports.

Menstrual and Gynecological Considerations

One of the great concerns relative to female participation in athletics is in the area of gynecological considerations and menstruation. Do females run a high risk of damaging their reproductive organs as a result of vigorous running, jumping, or contact sports? Should females avoid exercise and competition during the flow phase of their menstrual cycle? These and other questions were the subject of an extensive review article by Ryan.

First, there appears to be a high degree of variability among females with regard to exercise and competition during the various phases of the menstrual cycle. Many females have few or no menstrual difficulties under any conditions, whether

they are active or sedentary. On the other hand, a significant number of females have dysmenorrhea or other menstrual difficulties which apparently are neither helped or aggravated by vigorous physical activity. Recently, there have been reports of a total absence of menstruation in females who train for long-distance running. This may be related to their exceptionally low total body weight and reduced levels of body fat, since several studies have reported an absence of menstruation in chronically underweight females. These female distance runners frequently train 70 to 100 miles per week, and their relative body fat typically decreases to 10% or less (Figure 1). Return of menstruation usually follows a reduction in training intensity. Similar complications have been noted in gymnasts, dancers, and figure skaters.

Physical performance seems to be best in the immediate postmenstrual period, up to the 15th day of the cycle. The number of females who perform poorly during the flow phase of the cycle is about the same as the number who experience no difference. Some have even noted an improved performance during the flow, establishing records and winning world-class competition. Again, the individual variability is so great that no general rules of thumb can be given. Full participation in all types of activities should be allowed during the flow phase for those who experience no difficulties, and provision should be made for those who do experience difficulties, so they are not forced into undesirable activity.

The potential for gynecological injuries has been a major concern in athletics for centuries. Females at one time were discouraged from participating in any activity in which there was considerable running, jumping, or bodily contact. The uterus was considered to be highly vulnerable to major injury, which could have serious consequences later in life. It is now recognised that injuries to the female genital organs are rare. Unlike the male, the female's organs are internal and in an extremely well-protected position. The breasts are in a vulnerable position, but, even here, serious injury is extremely rare, even in contact sports. Follow-up studies on former female athletes indicate that they have normal pregnancy and childbirth, and in fact may have shorter delivery times and a faster return to normal activities.

Summary

From the preceding discussion, there appear to be rather substantial differences between the average female and the average male in almost all aspects of physical performance beyond the age of 10 to 12 years. Prior to this time, there are few, if any, differences between the sexes. What happens to the female once she reaches puberty? Is she physically over the hill, reaching her peak at a relatively early age, or are there other factors or circumstances that might account for her reduced physical capabilities? Recent studies on highly trained female athletes suggest that the female is not that much different from her highly trained male counterpart at ages beyond puberty. It appears that the average values used for comparative purposes beyond the age of puberty are comparing relatively active males with relatively sedentary females. Somewhere between 10 and 12 years of age, the average female substitutes the piano for climbing trees and sewing for chasing the boys down the street. It is well known that once one assumes a sedentary lifestyle, the basic physiological components of general fitness deteriorate; that is, strength, muscular endurance, and cardiovascular endurance are lost and body fat tends to accumulate. Similar trends can be noted for the male by the time he reaches 30 to 35 years of age, which corresponds to a reduction in his activity patterns. So, what appears to be dramatic biological differences between the sexes may be, in fact, more related to cultural and social restrictions placed on the female as she attains puberty. Further research into this intriguing area is certainly needed.

With regard to the female athlete, there appears to be little difference between her and her male counterpart in strength, endurance, and body composition. Strength of the lower extremities, when related to body weight and lean body weight, is similar between the sexes, although the male maintains a distinct superiority in upper body strength. Strength training, formerly condemned as a mode of training for women because of its supposed masculinising effects, is now recognised as valuable in developing the strength component, which is usually the weakest link in the physiological profile of the female athlete.

Endurance capacity in the highly trained female distance runner approximates values obtained in the highly trained male distance runner when the values are expressed relative to lean body weight and, for the better female runners, are relatively close when expressed relative to body weight. Although the female is far below the male in lean body weight, the highly trained female distance runner has a relative body fat similar to the male distance runner.

Because of these similarities, and because their needs are basically the same, there is little reason to advocate different training or conditioning programmes on the basis of sex.

Notes:

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In the section **Body Build and Composition** the statistics on body weight, etc., come from

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and

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Costill, D.L., Bowers, R. and Kammer, W.F. (1970) Skinfold estimates of body fat among marathon runners. *Medicine and Science in Sports*, Vol. 2, pp. 93–95.

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Panzkova, J. and Poupa, D. (1963) Some metabolic consequences of adaptation to muscular work. *British Journal of Nutrition*, Vol. 17, pp. 341–345.

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On maximal oxygen uptake

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On female distance runners

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UNLOCKING THE GREAT SECRET

WRITING REVEALS THINKING

By **Graeme Withers**
ACER

Nicola Chadderton

HERE'S a common or garden situation found in every class. The children sit down to work through a set of exercises. It may be Maths, or it may be something else. The children may be 8-years-old, or 15. They do the work. It may be a test or a group activity.

The yield is always the same – a set of papers for the teacher to mark.

Say it was Maths, in Year 3 (Std. 2): ten examples of simple number work. Here we have a clever and resourceful teacher (with a lot of spare time). She analyses the papers, and discovers that Alison, who got five out of ten, was correct on a different five questions from Neil, who also scored five. With even more time she can discover exactly what it is that distinguished Alison's set from Neil's – what thought processes or reasoning abilities were called into play in each case; what was going wrong, what concepts are needed by each child, but not yet grasped.

Why not set up a situation where the students actually tell us answers to these larger, more fundamental, questions? Along the way we might make some surprising discoveries. Alison got five out of ten; so did another girl,

Kylie, and she got the same five right. However they went about the problems in different ways. Is there any way of unlocking the secret of these individual differences, and building up a clearer picture of the abilities of the two girls? Yes: get them to write about how they thought.

Process writing across the curriculum

Over the past twelve months, I have been working with a group of Australian teachers in the mid-primary school, and with children of about the age of eight. The study which initiated this work is aimed at reviewing classroom practice in teaching and assessing literacy across the country. It involved getting the teachers to comment on their teaching philosophies, classroom strategies and assessment criteria, and a large selection of these comments will eventually be published for other teachers to share.

One strategy which just about all these teachers (there were over 50 of them) used in their rooms was the approach to students' writing which focussed on it as a process. A rough summary of their strategy might be the following:

1 **Thinking**
2 **Talking**
3 **First draft**
4 **Personal Edit**
5 **Conference**
6 **Final form**
7 **Publish**

Most of them made it clear that they used this strategy in other contexts than just 'Language Arts' or 'English' They also made it clear that it was a particularly useful strategy to support work in what they called, generally, 'problem-solving'. They had discovered a way of teaching not mentioned in the textbooks or in College courses. And it worked.

Process writing and problem-solving

Here is an adaptation, by one of the teachers, of the basic process. She was using it for problem-solving across the whole curriculum in her room. A wall-display showed to her 8-year-olds the points in **bold** in the following table. Her comments on what actually went on are added in ordinary type.

1 Listen to the problem.
The teacher or a student tells or reads the problem to the class. Teacher and class discuss the problem, underlining important words, and discussing other words or phrases that students don't understand.

2 Look at the problem.
In pairs, the children read the problem silently or aloud to one another.

3 Discuss the problem.
The pairs discuss: 'What are we being asked to do? How will we work with the problem?

4 Decide about the problem.
'Shall we draw a picture? Make a list? Make a table? Work backwards? Look for a pattern?'

5 Try the problem.
Students try, individually, one or more strategies to solve the problem.

6 Talk to your partner (or, if you're both stuck, to the teacher) about what you did.
This is the stage called 'Conferencing'.

7 Check your answer.

8 Publish and share your answer.

Donald Graves invented the techniques of 'process writing' after studying how 'real' authors write, and trying techniques out in New Hampshire classrooms. Even the teachers who hadn't read his books often gave pupils at the 6th stage (conferencing) a *conference card*. It has a top flap saying:

You will need:
- a pad;
- a pencil;
- a dictionary.

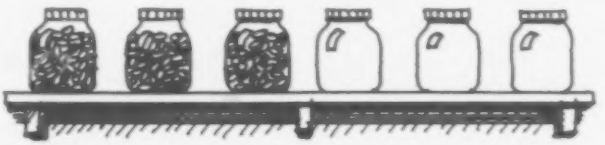
The main card reads:

Publishing Conference
1 Author reads the work and others watch and *listen*.
2 Check:
  - capitals;
  - full-stops;
  - commas;
  - inverted commas;
  - spelling;
3 Does it make sense?
4 How will the work be published?

This card was used during language work across the whole curriculum for Maths, Science, Social Studies, Health and so on, and not just when problem-solving was the main point of the activity. Children were very used to it, and cued in to the knowledge that special equipment (calculators and other instruments, for example) would also be needed during certain sessions, particularly Maths.

A simple example of process writing in Maths

In her Year 3 (Std. 2) class the teacher set up the following task: she issued each child with a Maths task sheet which depicted six jars on a shelf, three shaded (on the left) and three 'empty' (on the right). The printed stimulus for the task read:



Jelly Beans
Curly's boss had told him to set up the six jars as a display for the jelly bean promotion.
'How does it look?' asked Curly, about to leave for lunch.
'Well. I'd like it better if you alternated full and empty jars.'
Curly's in a hurry. What's the least number of jars he needs to move?

The children were asked to try to solve the problem of alternating the jars using some hands-on method (Unifix blocks were the most popular item resorted to, initially at least), and to record the results of this transformation of the printed problem to 'real-life'. A process writing procedure was undertaken, following the strategy set out on the wall-chart.

Here is a selection from the final versions of their solutions to the problem, produced by this class of 8-year-olds, after this process in Mathematics. They are ready to publish for the rest of the class and to be discussed by the class:

1. First I tried to use the unifix blocks but that didn't work out. Then I tried drawing a picture, but that didn't work out either. Then Catherine and I worked together using cups and marbles, the full ones had marbles the empty ones didn't. We took about 4 goes

to get it, and then we got it, well, Catherine did I should say. All we had to do was to move the marble from the second jar into the fifth jar. It was so easy, and the least number of cups we had to move was 1.

2. The answer was 1. At first I used unifix but I wasn't getting anywhere so Mrs Hockley said I could work with Jacki. Then Jacki and I got some mugs and very soon we found the answer. We poured the second into the fifth jar.
3. First I tried to work out the maths problem with unifix. But that didn't work because, I couldn't do what I wanted to do. Then I experimented on paper. But I still didn't get it. So on paper I drew six jars. I had 3 full jars at the start, and 3 empty ones at the end. I got the second full one and picked it up and tipped it into the second empty jar and there was my answer. It was 1 jar.
4. To fix a problem you need six cup and three marbles and you get the second morbel and put it in the fifth cup.
5. First I tried the unifix blocks. They did not work and then the paper did not work but then [I used] the caps I pot the second cup into the fifth cup.

These versions are what the children prepared for publication, and handed in for their teacher to review. Student number 3 also handed in his FIRST DRAFT, which showed her just how far he had come in organising and controlling his language during the conference process.

First Draft
first I treid to work it out with unfix but that didn't work because I couldnt do what I whanted to do. Then I experamented on paper but I still didn't cet it so on papper I drew some Jars and had 3 full jars at the start and 3 empety ones the I got the second full one and tiped it into the second empty and there was my arswer.

Published Version
[Above, Student No. 3]

Writing about thinking

Here is another example from Maths. You may skip this one if you don't teach Maths and go straight on to the last sections, *Across the curriculum*... and *Some implications*... But this example is a good illustration of the last implication of all – students can unlock for you the great secret, why they went wrong, for you to give them the teaching that will put them straight.

This time the material comes from a Year 6 class who were asked to do some writing about thinking. Once again the subject area is Mathematics, and the task a simple one, chosen by the teacher because she was curious about the differences she observed between students' abilities in the matter of number series. Here is the task:

Complete the following number series:

43 34 54 .... 65 76

And here is the solution:

43 34 54 45 65 **56** 76

The students used the process writing approach in preparing the descriptions of how they went about the task but they carried it out of their own, making notes as they went. Student number 1 derived the correct answer, and this is how she went about it:

What you have to do is to look at the first few numbers, and see what's going on. So I took 34 away from 43, and got 9. Then I took 34 away from 54 and got 20. So I sort of used that in the next bit. I took 9 from 54 and got 45, and then I added 20, and got 65 which was already there so I knew I was right. Then I took 9 away from 65, and got 56, and sort of checked it by adding 20, and there was 76, so I had to be right.

Student number 2, however, produced no answer, and offered the following piece of writing:

I couldn't do it – I don't know what you have to do.

These two represented the extremes of the work the teacher received. Between them emerged a number of other insights into student ability. Student number 3 gave the wrong answer, and, in describing how he went about it, provided the key to what the teacher had to do next to improve his understanding of number series and his ability to solve such problems.

Number 3's answer was 43, 34, 54, **63**, 65, **67**, 76. His writing told her that:

I looked for a number between 54 and 65, then I looked for a number between 65 and 76.

She took the issue further:

Teacher: Why did you choose 67?
Student: Because it's like 76, isn't it?

A sketchy understanding of how certain number series might work was mistakenly applied to this example – sometimes they do run in increasing order of size, but not in this case, as the appearance of 34 after 43 might have told the student. His selection of 67 'because it is like 76' was an interesting guess, in view of one other student's solution (discussed below), but no more than a guess.

Number 4 also derived the correct answer, but his description of how he got it happened to be faulty:

I had to find the formula. And the formula was +9 and take away 20. So I just went on adding +9 and −20 until all the spaces were full. And I got 45 and 56 for my answers.

Despite the fact that, in writing the 'formula' it was reversed from −9, +20, there is no doubt that the student could and did solve the number series in a fairly classic way.

Student number 5 took short-cuts in both solution and description: he wrote merely:

I took away 9.

There is obviously room for the teacher to point out subsequently that this approach to the problem will not always work, though it did clearly in this case. [65−9=56, 54−9=45]

However, for the teacher, the most interesting answer and description came from student number 6. She entered the correct numbers in the spaces, and also had 67 written on the end of the given series. Her comment read:

I really guessed because I can't do these things ever. Because 34 is 43 backwards I thought the first space might be 54 backwards, which is 45. Then the next space would be 65 backwards, and the last one 76 backwards, which is 67. I hope I'm right.

This completely visual approach to the problem was, in fact, one that had not occurred to the teacher as a possibility, and revealed that more ways of thinking than a computational one might be used to assist the solution. Again it pointed out a weakness in the particular student's understanding of number series ('I really guessed...'), but not one that would have emerged from a simple ticking or crossing of answers right or wrong. By that measure, student number 6 was as 'right' as numbers 1, 4 and 5, and various other students in the class.

When the resulting solutions were displayed ('published') on the classroom wall, students were challenged to read the other explanations, and add to the list if they found another way of expressing a solution, which several did. The teacher capitalised on number 6's visual solution

to offer other kinds of series in later exercises – everyone learnt, teacher included, from this whole sharing process. A rich process, indeed, when it can expose not only the accuracy, but also the diversity, of individual students' problem-solving processes.

Across the curriculum and across the grades

The process is generalisable, according to the teacher, beyond Year 3 and indeed beyond the primary school. Here, for example, is an expanded version of the process which might be used by teachers in secondary classrooms in setting up the strategy for their students. The words in brackets are interchangeable with the word in italics to indiciate how the basic scheme might fit other tasks in other classes.

1 **Thinking**
Consider the best methods of tackling the *problem* (essay topic/project/comprehension question). Get the criteria for assessment from your teacher in advance.

2 **Talking**
Share your ideas with a partner. Discuss a variety of different ways of meeting the criteria.

3 **First draft**
Set out your ideas on paper in point form. Experiment with different plans or ways of approach.
Try a rough draft. Don't worry about mistakes, but naturally you should try to be as accurate as you can.

4 **Personal edit**
Use a *calculator* (dictionary/instrument/work of reference) to check your draft. If you find an error, retrace your steps and find its source.

5 **Conference**
With a partner, check one another's *solution*(essay/project/answer). Incorporate the suggestions for improvement on your draft. Consult with the teacher if he/she is available.

6 **Final form**
Prepare a final version of your work. If your partner is available, use him/her to give it a final check.

7 **Publish**
Share your work with others in the class. And share theirs – they will have taken other paths which might be useful to you in the future.

Some implications underlying process writing

1 **Every teacher is a teacher of language**
You know the rules of *your* game, as far as language requirements are concerned – the English teachers know the rules of theirs. Only *you* can impart the rules of *your* game – but the English teaching profession can help with the rules (and the structures) of theirs.

2 **Language needs support**
It needs lots of dictionaries, thesauruses, specialised usage books. It needs dictionaries of different kinds, and at different levels (especially the ESL kids). And it needs spellers. And it needs them to be always available. Process writing in other disciplines sometimes needs specialist equipment to allow students to check their work. The word processor and spelling program is a huge boost to drafting, correcting, and publishing.

3 **Process writing does not mean more correction by you**
It does mean more correction, but by the students. It should mean less correction by you. If you find yourself doing more, then you're not doing it correctly. Initially, it might mean more in-class assessment, 'on the run' as it were, but you should find that even the need for this decreases as students become more familiar with, and more involved in, the process.

4 **Process writing does not mean more preparation by you**
By having the students participate in 'brainstorming' sessions about the possible outcomes for the work, which can be recorded and shared, you save yourself time – for thinking about the curriculum implications of the work rather than the details.

5 **Good writing partnerships are crucial**
Some will work best in pairs. Two arrangements are possible – students of equal ability, or one advanced and one less advanced. The former is probably preferable – otherwise advanced students miss out on getting the help that they need (and deserve), too. But you can judge best – you're the teacher. In some classes, students might work better in threes, or even fours.
Change the partnerships only when you see they need to be changed, when the pair or group are doing nothing. Students get used to each other's mistakes and are on the lookout for them.

6 **Self-reliance of the students is a key principle**
The more they participate in decision-making, the more they are committed to action (i.e., learning), and carrying out the whole task, rather than leaving it unfinished.

7 **Process writing takes class time**
'Will I get through the syllabus?' Yes; not everything has to be done using the process-writing approach. And you will save time if much of the students' drafting and personal editing is done at home.

8 **Language needs modelling by you**
You're the professional – you know the rules of the game, in the subject area being worked by the student. Sometimes these rules can be imparted by simple structures. But remember that occasionally you will have to show them how you would do it, quite directly.

9 **Students have to know the criteria for assessment before they begin**
A brainstorming session (five minutes) will collect as many criteria for the work in hand as you will need. Select from their suggestions, and remember – you don't have to assess everything all the time.

10 **The leading mode of assessment by you is diagnostic**
Students writing about how they went about a task will very often unlock, as the title of this article suggests 'the great secret' – just where they went wrong: what it was that they couldn't do: what concept they had failed to master.

Notes

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The Psychology of Intergroup Discrimination

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Ray Pigney, Evening Post

THESE 'Ocean Men' are tall beasts with deep sunken eyes and beak-like noses... Although undoubtedly men, they seem to possess none of the mental faculties of men. The most bestial of peasants is far more human.. It is quite possible that they are susceptible to training and could with patience be taught the modes of conduct proper to a human being.

The beasts in question were Jesuit priests, seen through the eyes of a Confucian scholar in the Sixteenth Century.

Our past suggests that prejudice, discrimination, aggression, and extermination are part of the human condition. Charles Lamb wrote:

> For myself, earth-bound and fettered to the scene of my activities, I confess that I do feel the differences of mankind, national and individual.. I am, in plainer words, a bundle of prejudices – made up of likings and dislikings – the veriest thrall to sympathies, apathies, antipathies.

Before proceeding, three central terms should be defined: (a) Attitudes – enduring clusters of feelings, beliefs, and behaviour tendencies directed towards specific ideas, institutions, people, and groups; (b) prejudice – an attitude toward members of a specific group, leading to a negative evaluation of them on the basis of that membership; (c) discrimination – a set of voluntary acts with unfavourable outcomes directed against members of a specific group. In its mildest form, discrimination can consist of negative forms of language concerning members of an outgroup, and the deliberate avoidance of contact with them. It can

mean more: the exclusion of outgroup members from employment, housing, schools and other social institutions. In an even stronger form, it can lead to segregation, by law or by custom.

One way of glimpsing the continuing tragedy is to consider the incidence and severity of wars. In World War I, for example, 4 million died directly from the conflict. The figure was 15 million in World War II, even disregarding acts of genocide such as the six million Jews exterminated during the holocaust, or deaths in concentration camps. Table 1 includes interstate wars since World War II, and only those in which more than 1,000 deaths have been documented. Even these estimates are conservative; and the list does not include fatal casulties in civil wars, and wars of independence, during the period covered.

Table 1. Interstate wars 1946-79 with deaths exceeding 1,000.

War	Period	Deaths
Palestine	1948-49	16,000
Korea	1950-53	2,000,000
Hungary	1956	39,000
Sinai	1956	4,000
Sino-India	1962	5,000
First Kashmir	1947-49	1,000
U.K. – India	1946-48	800,000
Yugoslavia	1946-48	45,000
Egypt	1948-59	8,000
Indo-China	1946-54	105,000
Madagascar	1947-49	1,000
Laos	1953-73	10,000
Algeria	1954-62	115,000
Tibet	1956-59	14,000
Suez	1957	3,500
Lebanon	1958-81	45,000
Vietnam	1961-75	1,000,000
Second Kashmir	1965	14,000
Six-day (Israeli)	1967	21,000
Honduras-Salvador	1969	2,000
Bangladesh	1971	17,000
Cambodia	1975-79	2,500,000
Angola	1961-75	38,000
Angola	1979	6,000
China-Vietnam	1979	70,000

Older Explanations

Some commentators, dealing with racial prejudice, have pinpointed a correlation between its incidence and the onset of European colonial expansion in the Nineteenth Century. Conquered people could be branded as 'inferior', a 'lower form of evolution', and even a 'burden requiring protection'. This notion of genetic inferiority has sometimes been viewed as a rationalization for the exploitation of the vanquished by a ruling class. This is a Marxist interpretation, and can be applied to such contexts as the role of slavery in the perception of the Negro in the Southern United States, and the need for Black labour by the ruling Whites in South Africa throughout this century.

Within social science, however, a genetic viewpoint included the further view that outgroup rejection was inborn or instinctive, derived from 'consciousness of kind', or from 'dislike of the unlike'. Humans, like animals, were thought to possess a biologically-controlled fear of strangers, and, for example, an innate sense of race. It did not suit the purpose of those holding this view to deal with instances in which curiosity of the strange or of the novel could lead to approach responses. Both ingroup and outgroup awareness was therefore inborn, and, according to some writers at this time, national behavioural characteristics were as well. Trotter, for example, drew upon the events of World War I to argue that it was obvious that the British were like industrious ants and the Germans like a ravenous wolf pack, qualities endowed by Mother Nature. Within the realm of scientific enquiry, however, this edifice was shaken in 1929 by Lasker, who found that Whites had no innate prejudice towards Blacks, at least in America! Although his work was marred by relying on what adults could recall of their childhood experiences, he made the provocative (though groundless) inference that prejudice developed from a child's unfavourable contact with one or more members of an outgroup. Later work was to show that contact is not an essential ingredient in the development of prejudice.

A belief in genetic inferiority was a corner-stone in the Nazi programme directed against Jews. Open antagonism expressed by Hitler led to German citizens avoiding all Jews, sometimes neighbours and friends. This climate paved the way to the enactment of the Nürnberg laws of discrimination. It was an easy step to the burning of synagogues and street attacks upon Jews. The horrific last link in the chain was genocide. Following the Second World War, a group of social scientists, including the German sociologist Adorno, spread a research net dealing with anti-Semitism beyond the frontiers of Germany. Initially, this work explored the concept that Fascism was not confined to Germany. An American pro-Fascist was thought to possess the following characteristics: Anti-Semitism, and in the predominantly Protestant areas, anti-Catholicism; being anti-foreigners, anti-refugees, anti-aliens; nationalism; totalitarianism, or adherence to a one-party system.

Although the trigger for the research was anti-Semitism, the focus became the search for a syndrome of characteristics located in the individual – the authoritarian personality. Such a person was: intolerant of ambiguity, narrow-minded, dogmatic, submissive to legitimate authority, and dominating over those further down in a chain of command. It also appeared that the source of these characteristics was in an individual's early experience. A recurring theme among subjects participating in the research was a childhood marked by punitiveness and rigidity, in a household dominated by the father. A latter-day Freudianism is patent. The source of authority is the father, and the criterion of the childish fidelity is unquestioning obedience.

By extension, a whole society may engender authoritarian attitudes. Nazi Germany needed only the arrival of an appropriate leader to take an entire nation along this track. Rokeach in 1960 fine-tuned the concept of authoritarianism to include the belief structures of adherents of the political Left, emphasizing the role that a totalitarian structure plays in moulding its citizens into rigid and intolerent beings.

More recent explanations

The treatment so far, has touched on views of prejudice and discrimination ranging from a genetic-deterministic explanation of outgroup rejection to a cultural-learning view, where genetics may be a component in the belief structure of the prejudiced individual. The latter view can be applied to democratic as well as totalitarian societies, since it allows that, within any system, certain individuals may develop a prejudiced personality. A country such as the United States, which vehemently espouses the principles of democracy and the right of the individual as the foundation of its constitution, should be relatively free of prejudice. Yet we know that prejudice and discrimination flourish within the American democracy.

What did seem to make sense to decent people, for a time, was that the atrocities of war were the prerogative of the Axis forces during the 1940s. The torture and execution of soldiers, and civilians were common-place items in newspapers of the Free World, both during and after the war. The perpetrators were Germans and Japanese. The essential ingredient in this argument is that a totalitarian system breeds unquestioning obedience to authority, and that extermination of outgroup members will follow from an order by an appropriate figure. The obedient follower is still responsible for the act, since it is part of that individual's personality. The explanation of the behaviour is person-centred.

In the early 1960s, this line of reasoning came under scrutiny in a series of experiments carried out by Milgram at Yale University. He advertised in a local newspaper, calling for volunteers to participate in an experiment dealing with memory. Ostensibly, the task of the subject was to help the experimenter in the study of punishment insofar as it can help memory. The subject was asked to deliver an electric shock to a learner (victim) each time he made an error in a verbal learning task.

The subject was to shock a male victim, via an electrode attached to his hand, while the latter was strapped to a chair. The authenticity of the experience was impressed upon the subject by giving him or her a sample shock at a 'mild' voltage level, prior to the commencement of the experiment proper. The victim was a mild, pleasant, middle-aged man, to all intents and purposes, a business executive. The instructions included the directive to increase the level of shock for each error committed by the learner-victim. These levels were clearly marked on the control panel of the generator, there being 30 steps, each with a switch. There were also verbal labels: varying all the way from "Slight Shock" up to "XXX – Danger".

Without knowledge of any experimental results, various volunteer subjects predicted where they would break off, and refuse what was a direct order from the experimenter to continue delivering shocks of increasing intensity to the victim. Psychiatrists, college students, and middle-class adults mostly judged that they would desist at about level 10, in the range of Strong Shock. None felt they would go beyond level 20, Intense Shock. It was the view of the psychiatrists consulted, that only a rare individual would administer level 30 (450 volts), and that person would by definition be a psychopath.

The results of the first experiments were startling. When the victim was in another room, and could not be heard (Remote Condition), 65% of subjects went to level 30, and a similar effect was noted even when the victim's voice could be heard. This still held true when the victim yelled with pain, said he had a heart condition, and pleaded to be released. The effect lessened slightly when the subject was in the same room (Proximity Condition), and when required to hold the victim's hand against the electrode (Touch Proximity Condition). Are we to conclude that a large number of psychopaths were roaming loose in the community about Yale University, where these experiments were carried out?

Milgram carried out further variations on this experimental theme. In one condition, the learner-victim asked to receive the shocks whenever the subject hesitated to deliver a punishment. In another, the experimenter (dressed in a laboratory coat) delegated his authority to a stranger, an ordinary man, dressed in street clothes. In the former case, subjects behaved in terms of the earliest modal predictions, not exceeding a level of Strong Shock, that is, there was no authority figure to obey. In the latter case, the effect of the ordinary man as order-giver was to re-establish a degree of obedience to authority in the subjects. In yet another condition, the subject was initially supported by two peers, who subsequently refused to carry on with the experiment and left the room. Even when authority had been 'weakened' in this way, some subjects continued to obey the experimenter to the end. As a final twist, Milgram required the subject to relay the order from the experimenter to another peer, who in turn delivered the shock. In this condition more than 90% of subjects moved into the 'XXX – Danger' zone.

Not wishing to deliver unnecessary pain, Milgram had, in all of these experiments, arranged that a confederate play the role of the victim. The initial, mild 'warm-up' shock delivered to the subject was real enough to convince that the apparatus worked, but subsequently the power was turned off, so that no shocks were delivered. The victim played a convincing role with his comments, pleas, cries of anguish, and so on. The peers used were also confederates of the experimenter.

Indignation followed the publication of Milgram's results. Psychologists criticized him for deceiving subjects, thereby leading them into committing immoral acts. The artificiality of psychology experiments also became a feature for comment. Press reports found this criticism particularly satisfying, since it exonerated Americans from implication in the macabre. Milgram said that he had been stimulated by Adolf Eichman's defence, when finally bought to trial for his war crimes. The former Nazi had claimed that he was only following orders and that, in any case, he personally had not executed one Jew. Milgram was ridiculed for suggesting that his experiments had anything to do with real life, let alone pointing the finger at Americans for being capable of committing atrocities. Though some saw scientific merit in his work, Milgram felt the sting of these criticisms. He carried the marks of a scientific leper for a time. Then came the news of a massacre of men, women, and children in Vietnam in 1969, at a village called My Lai. This war scarred the American psyche more than any other, and this incident has acquired a uniqueness by exploding the myth that atrocities are only committed by the 'other side'.

So far the explanation of prejudice and discrimination is founded on person characteristics. Consider the following, person-centred, explanation of aggression offered by the American social psychologist Berkowitz in 1962:

> Dealings between groups ultimately become problems of the psychology of the individual. Individuals decide to go to war; battles are fought by individuals; and peace is established by individuals. It is the individual who adopts the beliefs prevailing in his society, even though the extent to which these opinions are shared by many people is a factor governing his readiness to adopt them, and he transmits these views to other individuals. Ultimately, it is the single person who attacks the feared and disliked ethnic minority group, even though many people around him share his feelings and are very important in determining his willingness to aggress against this minority.

The European social psychologist Tajfel, however, regarded this view as typical of the restricted level of explanation offered by American social psychology. In 1974 he re-wrote Berkowitz's words as follows:

> Dealings between groups cannot be accounted for by the psychology of the individual. *Governments* decide to go to war; battles are fought by *armies*; and peace is established by *governments*. The *social conditions* in which groups live largely determine their beliefs and the extent to which they are shared. Ultimately, a single person's attack on an ethnic minority group that he dislikes or fears would remain a trivial occurrence had it not been for the fact that he acts in *unison with others* who share his feelings and are very important in determining his willingness to aggress against this minority.

The social structure

Ironically, a break-through in melding the theoretical component of the individual to a group level of analysis took place in the United States in 1949, although the proponent was a Turk, Sherif. Even when decisions are concerned with fact and not opinion, most people are susceptible to social influence, especially when the facts are unclear or ambiguous. Sherif proceeded from this base to a series of studies carried out in boys' summer camps. Ostensibly, the context was natural; the boys were there to learn, enjoy, and participate in a 'normal', middle-class, White, Anglo-Saxon, Protestant camp. From Sherif's point of view, the camp context was a social laboratory. The twenty four 12-year-old boys were given a couple of days to get to know each other. When friendship patterns were beginning to form, they were allocated to two groups and separated into two bunk houses, in such a way that naturally occurring friendship ties were mostly severed. The boys were told that the groups had been formed at random. The experiments then proceeded through three typical phases:

1. ***Ingroup formation***. 'Togetherness' is concomitant with the emergence of group norms which regulate behaviour. One group chose the colour red and the other blue as identifying markers during the ingroup formation phase, a period in which no intergroup contact was possible, but one in which there was always implicitly another group 'out there'. Furthermore, some epithets and name-calling of outgroup members, seen at a distance across the camp, took place during this first phase.

2. ***Intergroup friction and conflict***. Now, the two groups were brought together to take part in a series of competitions over several days. Sherif felt that this was the critical stage for the development of intergroup prejudice and discrimination. Although he did not believe that face-to-face contact was an essential ingredient for conflict, he did argue that intergroup tension was derived from a social structure in which there was competition for limited resources. These competitions consisted of athletic and other contests, such as tug-of-war, or cleaning the cook house. Points were accumulated from these encounters, there were prizes to be won, but these depended on being a member of the victorious team. Sherif found that one group, the Bull Dogs, felt provoked enough by the events to destroy the food of their adversaries, the Red Devils. The children made posters showing ingroup triumphing over outgroup. On another occasion, the Bull Dogs raided and did moderate damage to the bunk house of their rivals. In a second study of groups called the Eagles and the Rattlers, the Eagles captured and burnt the Rattler's flag; the Rattlers meantime hoisted an Eagle's pants aloft in derision. The boys groups were therefore mirroring real life, where intergroup conflict derives from an objective clash of interests, be it minerals, oil deposits, water, land. The wider implication was that the world needs to be re-structured to avoid such conflicts. The ultimate conclusion to the Sherifs logic is that, for a more peaceful world, we must break down group barriers. However, to do this the groups themselves would need to be dissolved.

3. ***Reduction of intergroup conflict***. This was attempted in the first study by removing the competitive element from occasions of intergroup contact. Mealtimes and other casual activities were now shared, the boys were encouraged to play with each other, but an impasse seemed to have been reached: Group divisions were mostly maintained. The Sherifs tried to mould a new group identity by pitting the camp as a whole, in baseball, against another camp. This proved to no avail. When the camp dispersed, the friendship choices of phase 2 had overridden the choices of phase 1. Time had run out: Once a Bull Dog, always a Bull Dog.

In a follow-up study, the Sherifs explored another hypothesis more carefully: Groups might pull together if they could recognize a common goal, rather than a common enemy. This goal must be accepted as superordinate, i.e., it must be mutually beneficial, and only attainable by cooperation. So, when the camp water tank becomes inexplicably blocked (arranged by the experimenters), many hands would be needed to unblock it; and when the camp attendant clumsily drove the only camp truck into the camp swamp, the tug-of-war could be directed against the truck, with both groups manfully pulling.

The Sherifs had taken a significant step towards an understanding of intergroup discrimination by emphasizing the role of the intergroup relationship, and ignoring the myriad of idiosyncratic events which might make each individual capable of discriminatory acts.

They had rightly demonstrated that a groups-in-competition situation is a sufficient condition for groups-in-conflict. However (a point made later by Tajfel, amplified below) all that is necessary for intergroup discrimination and prejudice is the simple division of people into groups, 'We' and 'They'.

Ethnic relations in New Zealand

In research commenced at the beginning of the 1960s, Maori and Pakeha children responded to a series of ethnic awareness and attitude tests administered by own-race interviewers. In all, four major studies were carried out during that decade, and more than 1,000 children were involved. There were seven tests of awareness of ethnic difference and of self-identification, and three tests of inter-ethnic attitudes.

The materials used included:

1. Monochrome pen sketches of children, presented in sets of three and used to assess the capacity of the child to differentiate 'which one is different from the other two?' A set consisted either of one Caucasian face with two Polynesian faces, or vice versa. These materials were also used to determine self-identification ('which one of these looks most like you?').

2. A doll assembly task, in which the child pieced together 12 skin-coloured parts to make up manikin figures (two boys or two girls). The research question were the same as in 1, but the test concentrated on the child's sensitivity to skin colour as a cue.

3. Three dimensional dolls, pink skinned versus brown skinned, blue-eyed versus brown-eyed; wearing Western clothing versus traditional Maori clothing. The test was designed to measure the child's capacity to use ethnic (e.g., 'Maori') or other physical (e.g., 'brown') referents.

As a group, these tests dealt with the child's ability to self-identity using ethnic cues, to differentiate between figures on the basis of such cues, and to categorize the figures as belonging to some known group (perhaps Maori or Pakeha).

Two points emerged in the results. First, in Pakeha children, the development of awareness of ethnic differences and ethnic identity followed a tidy sequence. In order, children mastered: (a) self-identification tests ('which one looks like you?'); (b) discrimination tests, or the differentiation of the 'one that is different'; and (c) classification tests where a verbal categorization such as 'Maori' or 'Pakeha' was employed. This trend suggested a steady, cognitive growth of an ethnic concept.

Second, in Maori children, the overall pattern of growth was similar, with a notable exception; they did not identify

with Maori figures until much older, at 9-10 years compared with 4-5 years for Pakehas.

The apparent, delayed self-identification in Maori children echoed already published data for young American Blacks. The answer to the riddle of delayed self-identification lies in the nature the attitudes held by the children towards the two groups.

The New Zealand data were linked with the same children's attitudes to each ethnic group. Attitudes were measured by three tests, two being of ethnic preference. In one, the child selected a doll, ostensibly as a gift for another child. In another, a playmate was chosen from a series of pictures of children's faces. In the third test, the child made a series of forced choices of favourable and unfavourable stereotypes in pair-wise comparisons of Maori and Pakeha faces. Pakeha children consistently favoured their own group on these tests. This trend peaked at six years, at which age there was nearly a total rejection of Maori figures. By 12 years, own-group choices were still clear, but a process of stereotype differentiation had commenced, so that the Maori may be 'lazier', but also 'kinder'.

The Maori results were nearly a mirror image. Preference for Pakeha figures was strongest at six years of age, whereas at 12, in-group preference was detected for the first time in the age range. However, up to 10 years of age Maoris favoured Pakeha figures, and it was in this age range that they also identified with Pakehas. The young participants were sensitive to the existing social structure, i.e., to the existing privilege which demarcated majority-minority relationships.

The role of society

The model presented here incorporates both the individual and the social structure. This is a general model which could be applied to ethnic identity, gender identity, national identity, political identity, and so on.

Just as social comparison with other individuals allows the person to strive towards a satisfactory image of the self, so do social groups allow the person to share the attributes which go with membership, and which mark one group off from another. A person's self-image is critically dependent on the degree to which the attributes of membership are positively perceived. The groups of importance to the person are membership groups (ingroups) and the relevant groups with which these are compared (outgroups). Knowledge of group boundaries derives from the process of social categorization.

The ease with which categories can be formed, and used, has been demonstrated in several experiments, following a line of research originally stimulated by Tajfel at Bristol University in the early 1970s. In a 1981 study involving 7- and 11-year-old boys and girls, we allocated the children at random to two groups, one named Red, and the other Blue. The children did not know which of their classmates had been categorized along with them, as Red or Blue group members. Tested individually, they were later given the opportunity to give sets of coins to members of the Red or the Blue group over a series of trials. These young children showed a high level of ingroup bias. Not only did they give more coins to children from their own group, but also maximized the difference between the rewards given to ingroup and outgroup members. It seems that the profit motive, even in small children, is heavily tempered by a need to maintain a relative advantage. There is another term for this kind of distancing: discrimination.

Three other points emerged from this study: first, the discriminatory effect was very strong, and it was not possible to make it stronger when the ingroup/outgroup dichotomy (an intergroup manipulation) was dropped, and a 'best friend' vs. 'enemy' one (an interpersonal manipulation) was introduced. Second, outgroup discrimination was powerful at seven years of age, and did not increase thereafter. Third, girls showed it as strongly as boys.

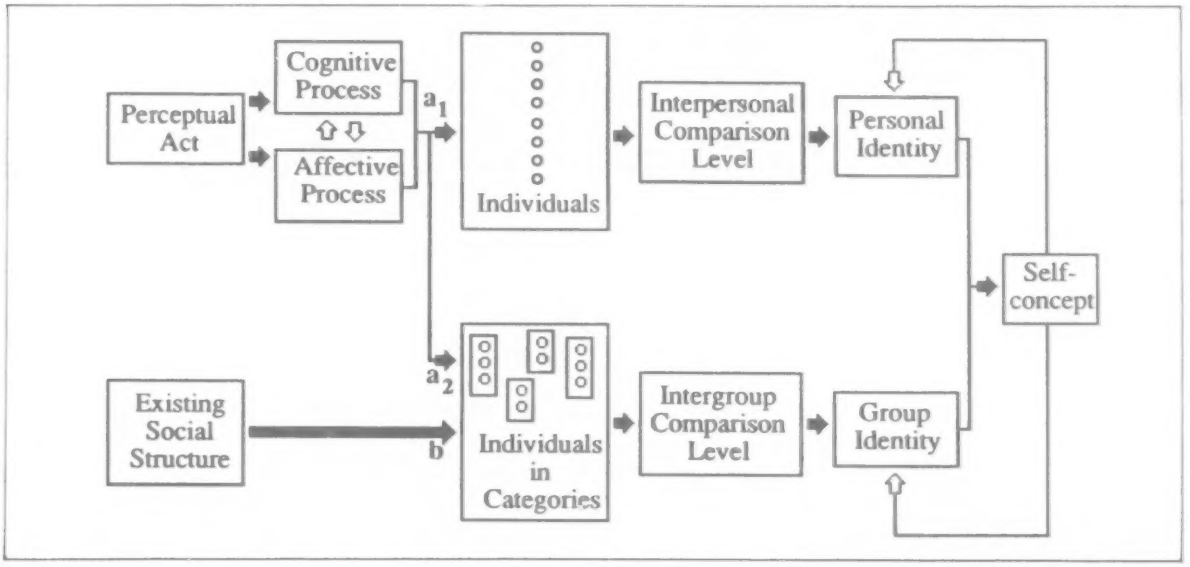
The meaning of social identity

Why is discrimination so pervasive? Distancing an outgroup keeps the intergroup boundary distinct, and the clearer one's own group is, the clearer one's picture of self becomes. Knowing who one is, through intergroup comparisons, provides crucial definitions to self-concept.

Path *b* in Figure 1 reminds us that we are born into an existing social structure which precedes the existence of any given individual. The child enters an environment where the relations between ingroup and relevant others are already specified. In the New Zealand studies, young children of both ethnic groups identified with Pakeha figures, reflecting their awareness of an existing social structure – one which they could not influence. For the Maori children, Pakehas served temporarily as a positive reference point.

Since society can change, the input from path *b* is not

Figure 1. A social-psychological model of the relationship between personal identity, social identity and self-concept.

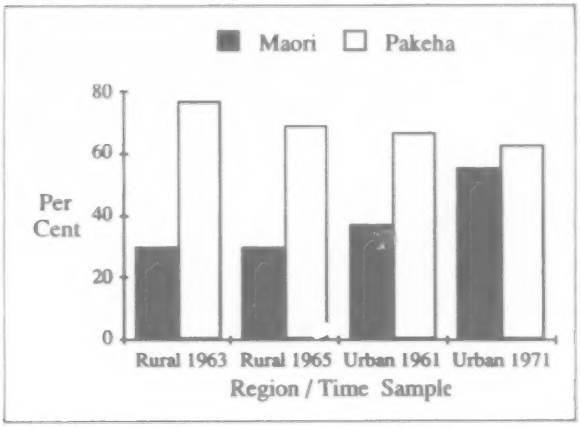


static. For example, the abolition of slavery in the United States created an enormous problem in restructuring Black-White relationships, for the Blacks as well as Whites. Changes in the role of minority groups has accelerated in other parts of the world since the civil rights movements in the United States. We tend to think of a 'minority' as a small group in a community. Population, however, is not the key. Access to power is. Disadvantage in education, health, and wealth can be other markers. Today, challenge to the status quo can occur in any country. The lesson of equal opportunity is disseminated worldwide, with images of an alternative future for any underprivileged group, for any oppressed nation.

Social change in Maori-Pakeha relations

The New Zealand research referred to in this paper was drawn from four studies, and the data have been reanalyzed to reflect this change of mood. They were separated in time and in region. The overall results are shown in Figure 2. In the two rural areas, both ethnic groups favoured pakehas. While Pakehas in the cities continued to favour their own-group, this was less marked than in the rural samples. The biggest change, however, was the shift to own-group favouritism by Auckland Maoris tested in the 1970s. All of these effects were more marked in older children (not shown separately in Figure 2). Two factors probably account for these results. First, urbanism is likely to make inroads into the relatively static majority-minority relationship found in many rural communities. The shift to the city for many Maoris signalled the destruction of the extended family, introduced a degree of ethnic competition into the urban labour force, and signalled the possible end of a language for an entire culture. The second factor relates to the last sample tested; it was in the early 1970s that the (Maori) Brown Power movement was born, modeled on the American Black Power movement.

Figure 2. Ingroup preference by New Zealand Maori and Pakeha children as a function of social change.



Conclusions

1. Prejudice, discrimination, large-scale aggression, and war continue as part of the human condition, and an increasingly technologically-oriented civilization seems no better equipped than a more primitive one in eliminating them.

2. Older theories of prejudice and discrimination stressed real, genetic differences between groups of people. Some regimes fostered these beliefs to justify oppression and genocide.

3. Even explanations which emphasized that attitudes can be learned tended to also argue that prejudice and discrimination resided in extreme or deviant personalities. Milgram demolished the substance of this view; most people will carry out orders which can harm others, especially when the authority seems legitimate.

4. Sherif contributed by showing that groups exert power over their members, and support discriminatory acts against an outgroup. However, it seems he erred in arguing that discrimination will only flower when the objective interests of groups are in conflict.

5. Tajfel pointed to the very existence of groups as the essential cause of prejudice and discrimination. Outgroups provide a reference and must be kept at bay.

6. My social-psychological model of the relationship between personal identity, social identity and self-concept deals with 'positive' processes. However, the model also deals with the concept of group boundaries, which can be maintained by acts of discrimination (a 'negative' process) against the outgroup. In applying it to a series of New Zealand intergroup studies, I found that both ethnic groups showed a strong ethnic preference for Pakehas in the earliest work. In later work, Maoris became more ingroup-oriented. The model, therefore, emphasizes the role of social-structural relationships in determining the course of attitudes, prejudice and discrimination against outgroup members.

7. Social inequality presents members of minorities with the impossible task of maintaining self-esteem. Presently, there are movements in many countries for the underprivileged to get a more equitable deal. Unfortunately, even when groups are perceived to be equal, the maintenance of psychological boundaries can lead to distrust, prejudice, and discrimination. The challenge for the psychologist is to contribute to an understanding of how a group can preserve its integrity, contribute to positive self-esteem among its members, but prevent the inevitable intergroup comparison process from leading to negative attitudes towards outgroups.

Notes

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A fuller account of this material, including an elaboration of the social-psychological model shown in Figure 1, can be found in the *New Zealand Journal of Psychology*, Vol. 17, No. 1, June 1988.

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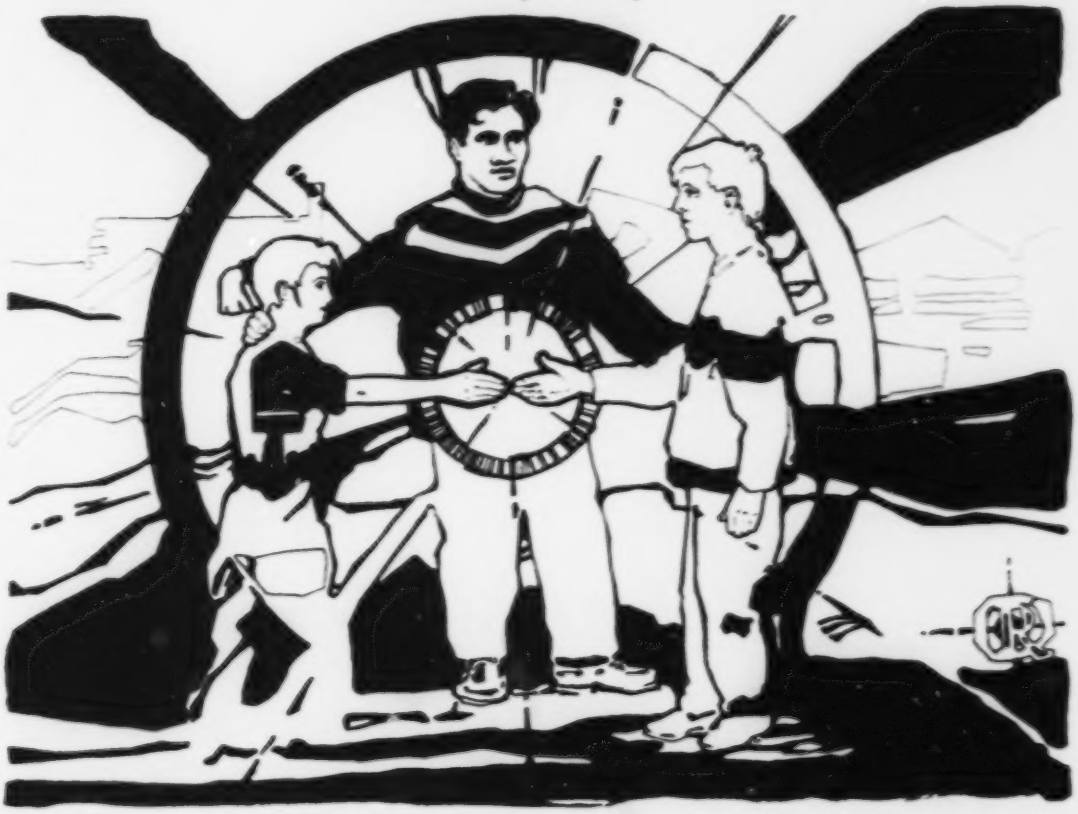
DEALING WITH CONFLICT

MEDIATION PROGRAMMES IN SCHOOLS

By **Jan Cameron** and **Ann Dupuis**
Canterbury University



Rhys Morris

JANE is fourth former (Year 9) at a suburban high school. She spends her lunchbreaks and a lot of her after-school time with three of her classmates. They've been close friends since primary school days and now they're in the same class at high school. They enjoy school and frequently help each other with homework and projects. They all want to 'do well' in their subjects.

Jane's cousin Sally moves to town and starts at the same school as Jane. Sally is in the third form (Year 8). Jane wants to help her cousin settle into the new environment, which she knows is strange for Sally. She spends time with Sally at school and when Jane and her friends have their lunch together Sally joins them. Sometimes Sally walks home with them after school.

Jane's friends object. They say they don't want to have a third former hanging around with them. Jane says it's just for a while, till Sally makes some friends of her own. Jane's friends are adamant: Jane can choose between them and Sally.

Hurt and upset, Janes tries to get back at them. She niggles at them in class. When that doesn't work, Jane 'borrows' their books, usually just before a test. Their form teacher starts to find Jane's behaviour irritating. One day Jane gets sent from class, to 'cool off'. She says it's all her friends' fault. But no one seems to care whose 'fault' it is. Jane is told to 'pull herself together', or there will be more serious punishment. Gradually Jane becomes withdrawn and sullen. She does as little work as possible in class and is unco-operative with her teachers and classmates. Everyone begins to find her a pain.

To many teachers Jane's behaviour would be a classroom nuisance. It takes up teaching time unnecessarily and stops Jane herself from achieving as well as she might. The issue – a fallout between friends – might appear trivial. After all, at this age friends come and go. It's no big deal surely? But the facts of the situation are that Jane is upset, her friends are aggravated, the teacher is irritated and Sally, who seems to have been forgotten in the saga, is perhaps rather embarrassed. The situation

doesn't warrant punishment, except perhaps for Jane's nuisance behaviour in class. Neither does anyone consider that it warrants counselling. In most schools it would probably be left to sort itself out. Eventually, presumably, Sally will make some friends of her own and Jane will be accepted back by her friends. But it might not happen that way.

At Hagley High School a service is provided to help students (and staff) resolve problems such as Jane's: the Hagley School Mediation Service. In the hypothetical example it might be the teacher who asked Jane to go to mediation with her, in which case the teacher might well discover what is really bugging Jane and Jane might come to appreciate how her behaviour towards her friends is unfairly affecting other people in the class (including the teacher). Or the teacher, being aware of the tension between Jane and her former friends, might suggest that Jane go to mediation with her friends. Or Jane herself might ask her friends to go to mediation.

The Mediation Service

Mediation is a voluntary service, in which two mediators help the parties in dispute to find a way of resolving their problems. In mediation the disputants (or parties) are asked to tell their 'story' about what happened, helped to clarify the issues involved, encouraged to understand how each other feels about these, and are helped to find some resolution which each party agrees to, which can work, and for which both can share responsibility. Even though a logical resolution might be obvious to the mediators, they do *not* tell, or even suggest to, the disputants what they should do. Their role is to act as 'agents of reality' to try and find workable agreements. At the end of a mediation session the disputants might not necessarily be friends, but they will usually have gained a better understanding of the other person(s) involved in the dispute.

Mediation is a way of finding a means of peaceful coexistence when there are differences between people. To achieve this, the process assumes that each party has an interest in resolving the problem and that each is prepared to take some responsibility for any agreement reached. Mediation is often called the 'win-win' method of dispute resolution. Theoretically there are no losers in mediation. There is no judgement and no punishment. No advice is given by the mediators and no therapy provided. Mediation thus differs from other forms of dispute resolution, such as conciliation, arbitration, adversarial methods and punitive discipline. It also differs from counselling.

Mediation is premised on the belief that conflict is a natural part of life and is neither good nor bad. It has been argued by some educationalists that learning to cope with conflict should be regarded as an intrinsic part of a child's education. Mediation is based on self-interest which derives, at least in part, from the fact that the disputants are in some form of continuing relationship with each other – i.e., they need to 'get on' with each other. It is a method which has been tried and tested in United States schools for nearly 10 years and which is now being developed in schools in England, Australia and Canada. Hagley High School is the first New Zealand school to pilot a school mediation service.

The Development of School Mediation Overseas

Although the 'win-win' method of conflict resolution was first articulated by Mary Follett in 1924, this central tenet of mediation has most recently been popularized in Fisher and Ury's 1981 bestseller *Getting to Yes: Negotiating Agreement Without Giving In*. During the early 1980s community mediation became a popular and effective alternative method of dispute resolution, usually provided through Neighbourhood Justice Centres. A major breakthrough in developing mediation programmes for schools was the establishment of the San Francisco Community Board's Conflict Manager programme in elementary schools begun in 1982. It is the Community Board's programme which is most widely used to provide a school mediation service.

In the Community Board's model, students selected by their peers, and teachers, receive 16 to 20 hours training in such skills as active listening, creative questioning, clarifying and team work and use role play to practise the structured steps of the mediation process. At junior school level conflict managers work in pairs in the playground during lunchbreaks. In the intermediate and high schools school mediators provide a confidential mediation service to students and, sometimes, teachers and parents in a private room specially set aside for mediation. It is the Community Board's model which has been adapted for use at Hagley High School in New Zealand.

Typically, mediation in schools uses volunteers (staff and students), selected as far as possible to reflect the breadth of the school composition by age, ethnicity, and gender. Mediator training is provided by school members (staff and, in some cases, student mediators) or by community mediators. Mediation programmes are co-ordinated by one or two people, usually teachers from within the school.

Disputants either refer themselves for mediation or are referred by another member of the school. Two co-mediators use a defined process to assist disputants themselves to resolve their own conflicts and to work out a formula for peaceful co-existence. Mediators facilitate by taking the disputants through a process which involves defining the grounds of the dispute, clarifying individual points of view, each disputant explaining the effect of the conflict on him/her and the individuals then working together to produce a resolution and agreed strategy for coping with any future conflict.

Problems dealt with include fighting, prejudice, poor sportsmanship, 'horseplay', poor parent-child communication, upsets between friends or groups of friends, girlfriend/boyfriend upsets and student/teacher disagreement. In some overseas schools disputes between large groups or gangs have been mediated, as have disputes between groups of students and community members (e.g., the school bus driver). Issues involving drugs or weapons are not usually considered mediatable and are dealt with through the school's traditional disciplinary procedures.

The positive effects reported in overseas schools include the expansion of existing methods for dealing with problem behaviour, improved communication in the classroom, safer and more peaceful playgrounds, reduced vandalism and truancy, shifting responsibility for resolving disputes from adults in the school to the students, and the acquisition of listening skills, problem-solving skills, sensitivity, tolerance and an awareness of personal differences. It is also notes that mediation enables students to tackle issues which to them are critical but which to an adult might appear trivial and not be taken seriously. Such 'trivial' issues as giving dirty looks, prodding and poking, and friends falling out, affect a student's ability to learn and are often a disruptive influence on others in the classroom. They are often the basis of disputes which might, if left unresolved, become more serious. One New Zealand teacher has likened mediation to the 'policeman on the beat: it stops things from getting out of hand'.

Conflict management and dispute resolution can be taught at any level of the educational system. They can be taught as theoretical understanding or as practical skill (or both). In fact mediation programmes in America, Canada, Australia and England now incorporate the twin goals of dispute resolution and conflict management by recruiting and training mediators, co-ordinating school mediation services and inculcating in staff and students an awareness of issues such as cultural differences, prejudice etc. In Hawaii alone, where the first school mediation programme began in 1982, there are now peer mediation and conflict management services provided in 35 of the 235 schools (elementary, intermediate and high schools) in the state system. It seems this innovative method of dealing with conflict takes, on average, two years to be accepted by the students and five years to be accepted by the teachers. It is with a sense of achievement that one co-ordinator has commented that mediation in Hawaii schools is now taken for granted.

The scope for mediation and conflict management programmes appears to be wide. In New Mexico peer mediation is provided in state correctional institutions for adolescents. In Canada mediation and conflict management are being taught to teacher trainees. Some universities also provide mediation services and full graduate programmes are now offered for study in dispute resolution and conflict management. Such study can be seen as interdisciplinary, drawing on law, political science, anthropology, education and sociology.

School Mediation in New Zealand: The Hagley Pilot

As in the United States, the school mediation service at Hagley High School grew out of an association with community mediation. In 1984 a community mediation service was established in Christchurch. Similar to alternative dispute resolution and Neighbourhood Justice Centres in Australia and (to a lesser extent) the United States, this service tested the suitability of mediation for community disputes in New Zealand. The service was evaluated by Jan Cameron and Ray Kirk, in 1984-85. The method was endorsed.

During the period 1984-1989 mediation in New Zealand has assumed increasing importance in both government and non-government agencies. In particular, the Housing Corporation, under its Residential Tenancies Legislation, has initiated a mediation service for tenancy disputes. The Labour Department also provides a mediation service. During 1984-87 the Christchurch Community Mediation Service (CMS) included in its activities educational and promotional workshops in schools, the WEA, PPTA and the Teachers' College. One recommendation of the researchers was that the educational activities be extended. At a time when schools are experiencing dramatic changes which might well result in increased stress within the school system, when schools are also coping with increased pressure to review disciplinary procedures (in particular to ban caning), it seems appropriate that mediation be considered as a means of resolving disputes affecting students, teachers, other school staff, parents and members of the community with whom the school interacts.

When lack of finances forced the CMS to close in 1987 three of the volunteer community mediators approached Hagley High School, which had previously shown interest in the mediation workshops, and offered to assist in the development of a school mediation service. The volunteers undertook to train the first two intakes of student and teacher mediators at Hagley and to advise the teacher co-ordinator on the organisation of the mediation service. The programme was established with very limited financial resources and relied heavily on the goodwill and cooperation of those students and teachers who gave up their time to train and act as mediators. The experience and contribution of the three volunteers was vital for the first 12 months, during which time they contributed approximately 32 hours each per month to developing the school service. From the outset the enthusiasm and support of the Principal has also been essential.

As the Hagley programme became a reality the volunteers sought the assistance of the principal investigator of the CMS evaluation to monitor and assess it. A grant from the Department of Education to the University of Canterbury facilitated the employment of a research assistant to help with the school evaluation. The remainder of this article reports on the initial phase of that evaluation, from 1987 to the end of 1988.

Evaluating at Hagley

The evaluation methodology adopted for the research is comprehensive, flexible and interactive. That is, it is intended to cover all ways in which conflict and mediation impinges on the school and its members. By using participant-observation, intensive interviewing, questionnaire surveys and analysis of dispute files, the focus and method of the research can change to accommodate the flexibility of the mediation project itself. Furthermore, we believe that evaluators are not just assessors but are also educators and facilitators. This means that feedback to the participants in the programme is continual and constructive, something for which school members express their appreciation. However, we are aware that the very presence of evaluators might change the course of the project, even to the extent of ensuring its continuation when it might otherwise falter. While this risk stems from the particular research philosophy that we ascribe to, it also serves to highlight the utility for any school programme of incorporating an evaluation into the service at the outset. Two interim reports are available and a major report late 1989.

The Hagley programme has been in operation for nearly 2 years. In that time it as evolved from being totally reliant on the volunteers who introduced the programme to the school to a stage where the school has now assumed full responsibility for the ongoing programme, although the volunteers continue to have input as consultants, e.g., for mediator recruitment and training. We could test how acceptable and useful the programme in this particular school is now, but it is clear that true tests will not be possible until it has had time to 'go it alone'. It is important to note overseas experience that school mediation programmes need, for their survival, the interest and enthusiasm of key school staff, especially the principal and school counsellors. Counsellors in fact, are often the staff who are most hesitant to accept such a peer service, yet gain most from it since it relieves them of referrals in such a way that their time can increasingly be devoted to crisis counselling.

In the first six months of the pilot programme at Hagley there were 18 mediations. This figure is much the same as the frequency of mediation in American schools at the beginning of the programme. Of the 18 mediations at Hagley,

11 were between students
4 were between staff and students
3 were between family members.

Of the 39 disputants who had been to mediation,

31 were students
3 were teachers
5 were parents.

Thirty-three of the disputants were pakeha and 6 were Maori. To date there have been no Samoan or Asian disput-

ants, despite there being two Samoan student mediators. The appropriateness of mediation as a method of dispute resolution for different Polynesian groups is currently under study by the researchers.

Use of mediation for problems between students and teachers is a way of acknowledging that clashes in the classroom, for example, are a result of the interaction of two parties, rather than being the student's responsibility alone. In this way mediation can be seen as empowering of students. It helps teachers to understand the 'baggage' which often lies behind conflict and classroom disruption. Teachers have also said they have felt empowered by mediation. Mediation appears to be most attractive or appropriate to younger students: 24 of the 31 Hagley students mentioned above were 13-, 14- and 15-year-olds; 12 were third formers (Year 8). This reflects the kinds of disputes younger students are involved in: name-calling, hassling, gossip, rumours and relationship problems seem to be issues which younger students have most difficulty with and these are also disputes which lend themselves to mediation. However mediation has also been used at Hagley for disputes between staff.

Spin-offs

While the most obvious benefit of school mediation is that people in conflict find ways of resolving their problems, a spin off is learning interpersonal skills via the mediation process. A long term benefit of mediation is that students and staff learn the skills to resolve their own conflicts, often without recourse to a formal mediation session. It is not uncommon for students who have used mediation as disputants to want to train as mediators. The American claim that students with a reputation as 'trouble-makers' often become excellent mediators and gain a rather different leadership role in the school has not yet been substantiated at Hagley. However Hagley mediator-trainers do emphasize that good mediators are not necessarily 'A' students.

Students who train as mediators need to be good listeners, need to be able to 'hold their tongues' and not rush to give advice, they need to accept other people's values without judgement, to respect privacy and confidentiality, and they need a sense of humour. They also need to have the time to be able to be committed to the programme. In turn they gain considerable skill in dealing with human interaction, in knowing themselves and in understanding conflict. These are life-long skills which must have an influence on the students' interpersonal relationships long after they have left school. The New Mexico school mentioned above also sees acquisition of mediation skills as being a way of breaking the cycle of child abuse which some families seemed trapped in.

Introducing Mediation

The Hagley experience has reinforced overseas indications that the pre-programme phase must be carefully developed. Time has to be made available within the staffing provision for a teacher (or teachers) to co-ordinate the programme. It seems best that this not be the guidance counsellor, since it is important that the different functions of mediation and counselling be identified. But it might be a guidance teacher. Time has to be allowed to promote the programme and to gain the commitment of key staff. The recruitment, selection and training of mediators also takes time. The benefits, however, soon seem to outweigh the costs. At this stage the staff at Hagley approve of their service and believe it should continue.

New Zealand has at present few people skilled in both mediation and training. However a variety of possibilities for combined school training are emerging. The authors can provide interested schools with further information on school mediation and mediator training. There is a list of reading which will be useful for anyone contemplating using mediation in schools in the Notes section.

Notes

Dr Ian Cameron is a lecturer in Sociology at the University of Canterbury, Private Bag, Christchurch, New Zealand.

Ms Ann Dupuis MA Hons., is a Tutor and Research Officer in the Sociology Department at Canterbury University.

The evaluation report is

Cameron, Ian and Kirk, Ray (1986) *Assessing An Innovation – An Evaluation of the Christchurch Community Mediation Service*. (Available from the authors, Sociology Department, University of Canterbury, Christchurch. Price $13.50).

The two interim reports on the Hagley pilot scheme are

Cameron, Ian and Dupuis, Ann (1988a) *The Implementation of a School Mediation Service at Hagley High School. Phase I: 1987*. (Available from the authors, Sociology Department, University of Canterbury, Christchurch. Price $3.38 plus GST).

Cameron, Ian and Dupuis, Ann (1988b) *"Finding Its Feet" – The Hagley High School Mediation Service. Phase II: February-June 1988*. (Available from the authors, Sociology Department, University of Canterbury, Christchurch. Price $3.38. Includes publications list and ordering information.)

The word *mediation* is sometimes used loosely to mean any sort of negotiated settlement where a third party is involved. In his review of mediation in New Zealand MacDuff includes industrial mediation and mediation practised in the Family Court and Small Claims Court. These are not considered comparable to mediation as practised by the Housing Corporation or Labour Department since they usually involve some form of arbitration or negotiated agreement. This differs from the central tenet of community mediation which is that disputants find their own resolution, no solution is presented to them, and certainly not 'ing on a take-it-or-leave-it basis.

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Further reading

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Palenski, Joseph and Launer, Harold (1986) The Development of Mediation in Schools – An Identification of Patterns. Ch 10 in Palenski and Launer (eds.) *Mediation, Context and Challenges*, Springfield, Illinois: Charles C. Thomas.

Roderick, Tom (1988) Johnny Can Learn to Negotiate, *Educational Leadership*, December 1987/January 1988, pp. 86-90.

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THE INFORMATION QUEST

A look at children as information seekers

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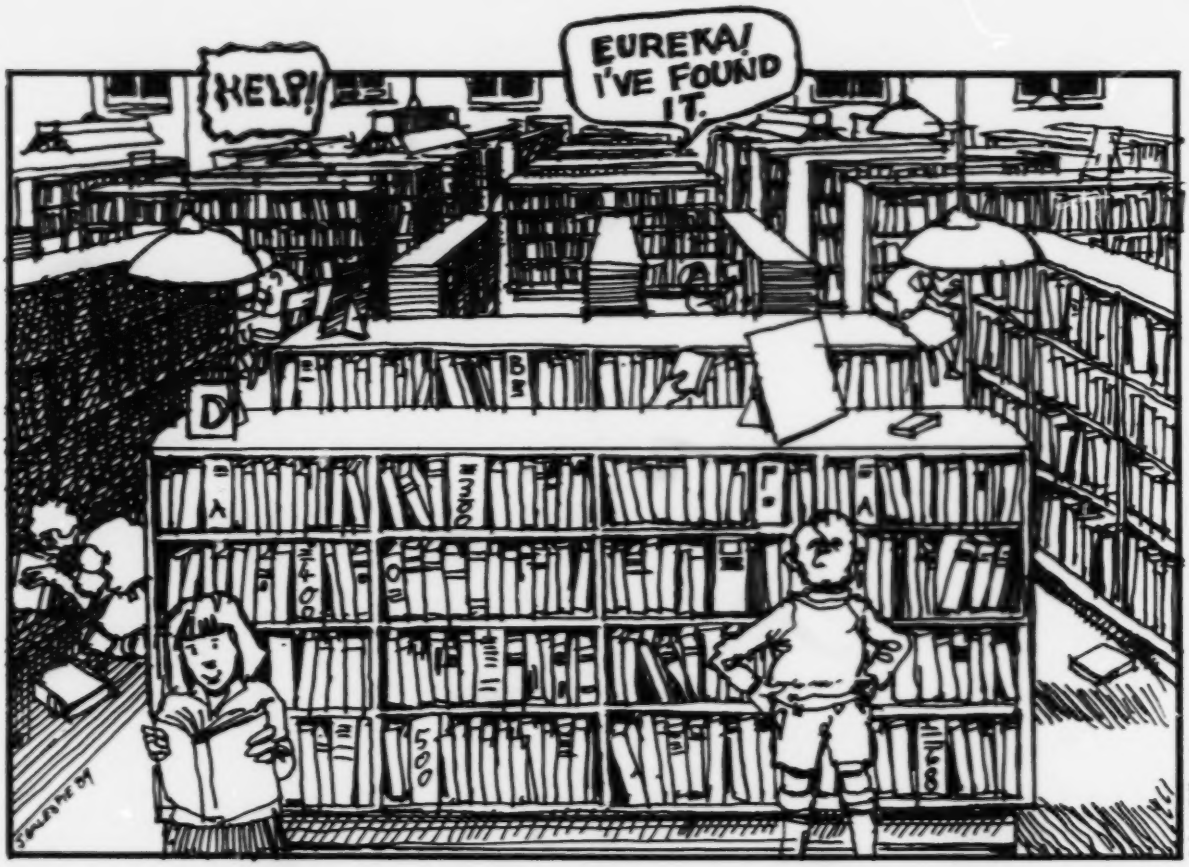


John Gillespie

Children as information seekers

IN AN EFFORT to get students to think for themselves, to be involved in their learning and to use information sources, teachers often set project assignments. Sometimes this independent work is supported with lots of information and guidance from the teacher. Sometimes the children are really on their own. In the classroom, the children are enthusiastic about projects and they can easily tell you how to go about finding information in the library. Yet often the teachers are disappointed with the end product. Looking at some projects one researcher commented that children seem to treat information sources as 'treasure troves of sentences that can be stolen and marketed again in another setting'. Are we expecting too much from the children or are there some difficulties in the task that we just have not seen?

To answer this question we need to know about the demands of project work, as children experience them. However, very little information is available about these demands. Children usually head for the school or public library when they are given a project, but how do they go about finding information? What we know about information seeking in libraries has so far been gained from questioning and observing adults. So our study focused on younger children, their view of project work, books and library systems.

To get this, 23 11-year-old children were interviewed individually. Video recordings were made of their attempts to turn the project subject into questions that could be researched and of their efforts to find information in the school library. During the entire sequence, the interviewer encouraged them to 'think aloud' and asked lots of questions to keep them going and to clarify what was going on. Next, the children saw their own videos and talked some more about project work, books and libraries. The finished projects were collected at a later date.

Surprisingly, the children were not overly bothered by the camera and seemed to talk openly and honestly about their thinking and the problems experienced.

From questions to the library catalogue

The children's first task was to come up with questions that they wanted to answer. It is normally assumed that this is itself quite easy. The 23 children interviewed varied greatly in ability level and for some, this aspect of topic work was difficult and worrying. The topic chosen was BIRDS – a familiar subject to most children. Indeed, most children came up with questions fairly quickly but some seemed unable to draw on what they already knew to help them sort out what they wanted to find out. When you don't know much about a subject and have no information in front of you, it is not easy to identify subject areas which are interesting or to spot gaps in knowledge.

When pupils were satisfied with the questions that came to mind, they were asked where they would look for information and all but four outlined the library procedure of going from non-fiction subject catalogue to the shelving and individual books. The remaining four were confused over the difference between fiction and non-fiction. For three of these, the confusion was resolved before the fiction section was examined in detail. However, one student identified a title by Wildsmith and searched the library's fiction collection at length. Once at the W section of shelving she looked for *Birds* without realising that the books were arranged according to authors' surnames, not alphabetically by title.

From catalogue to books

Given the topic BIRDS, all but two children used that word to check the non-fiction subject index. There they found one or more of the four cards. (One child searched for EAGLES then resorted to a random scan of the shelves as no match was found, and one looked for ZOOS then sought the ZOOLOGY section.) The four cards gave six different locations for bird information but most children looked only at the first card they came to. The result was that some children were confused by the sheer number of BIRD entries they found (the first card in the drawer had three entries) and some were directed to tiny sections of the collection, such as 333.9 BIRD PROTECTION (under Economics), far away from the bulk of the bird books!

In the interviews most children who had found the multiple entry card were asked whether they understood the numbers on it, and if so what was the difference between them. The numbers were 598, 598.2 and 598.29931. The following examples were typical answers.

PM: **Do you understand what all those numbers mean?**
Jane: **Oh, um, they're the.. I think it's the Dewey number or something and you look it up (points to spine of book).**
PM: Fine. Do you understand what the difference between that one and that one is though?
Jane: No, I know that's longer but that's all.
PM: Do you know what all those numbers mean?
Kay: Um, they're Dewey numbers, where you find it on the back...
PM: Okay, can you tell me the difference between those and what they actually mean? They're all Dewey numbers aren't they?
Kay: Yeah.
PM: Do you understand that one?
Kay: I don't know what they mean.
PM: Okay, so you don't know what they mean but you know that you'll find them on the back of books.
Kay: I think we got told.
PM: Pardon?
Kay: I think we got told one time but I've forgotten.

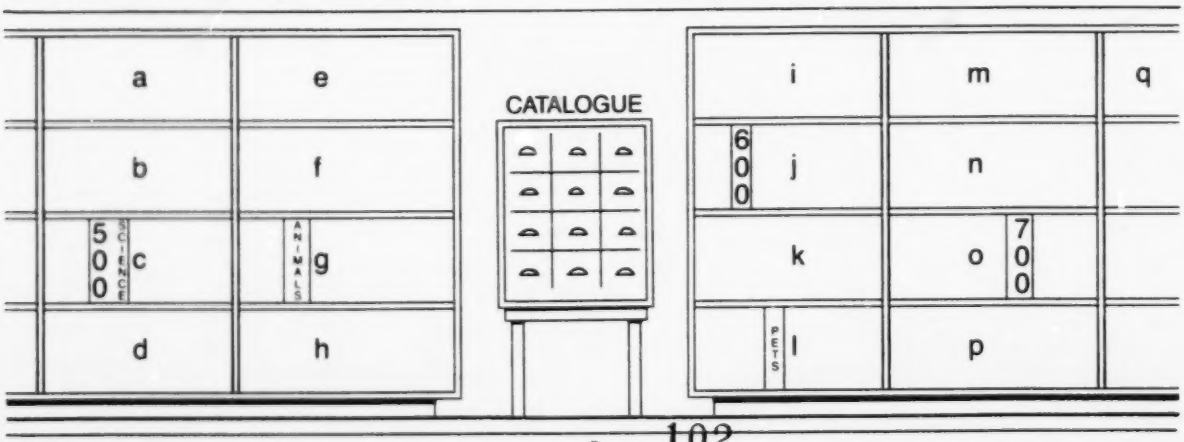
Most of the children had an understanding of the Dewey system that related numbers to topic locations but only one student appeared to understand the decimal points. However, many of the children did not seem to understand the relationship between the index cards and the books on the shelves. For instance, Gina found two index cards with similar entries, 598 and 598 NZ, which she took to mean that there were two books on the subject. Several others made reference to having found *the* book with a particular number or *the* book with the word BIRDS in the title.

Shelving systems

The children often approached the catalogue with lots of confidence and then came to a halt when faced with finding the right section of shelving. Picture the typical school library with shelves lining the walls around the entire room. Some children expected Dewey numbering to be continuous along a single shelf going from one corner of the room to the next. They had no idea that the shelving is made up of bays or units which are completely filled top to bottom before the next bay is reached. The diagram shows the section of shelving relevant to this study and includes the shelving guides the children saw. (The shelves have been lettered in the diagram in the order in which books were shelved, to make discussion easier.)

These Form 1 (Year 6) children were looking for BIRD books, the bulk of which were at 598. Most of them started

Figure 1: Shelving layout of the non-fiction collection relevant to searching for Birds, Dewey 598 and 598.2



their search beside the 500 guide (only two went to the 600 guide and worked backwards). Those students who saw the shelving as continuous looked at shelves c and g then went to a position to the left of d for the next number. Confusion grew as they realised that these numbers were much smaller. Some of them failed to note that shelves e and f also hold 500 books and some did not notice shelf i since it was above their eye level.

Shelf guides with words on them led to confusion for one child since the words were not alphabetically ordered and they appeared in the middle of guides showing numerical order. The weaving together of numerical and word-based systems seemed illogical to her.

Most children seemed to scan the shelves for a particular number and once that number had been located they then started reading titles and paid no further attention to Dewey numbers. In general this is a sensible approach but a quarter of the students interviewed found some mis-shelved BIRD books and assumed them to be the entire collection. Had these children checked Dewey numbers on the books that followed, they may have realised that something was wrong as low Dewey numbers do not usually appear to the right of high ones. Only four students spontaneously searched for more books on the topic. The mis-shelved books were not an intentional trap but since the first student was trapped by them we made sure BIRD books were placed at that (mis) location for all the children.

It seems that children's perceptions of the library shelving system can frustrate adult attempts to provide help. Certainly shelf guides did not often help. Indeed, of the eleven students who found the bulk of the BIRD books quickly, five found them purely by accident by randomly scanning the shelves and one student failed to find them during the interview or at any time during the following week. Her finished work covered less than a page and came with a note: 'I looked everywhere for information, I mean everywhere. Sorry.'

This was despite the fact that the library had 35 bird books on the main shelves plus the encyclopaedias and some more New Zealand bird books in the 'learning resource centre' attached to the library. The student had found relevant information in the zoology section during the interview and had seen the BIRD entries in the subject index, but used none of these.

Choosing a book to answer a question

Most of these 11-year-olds came up with project questions fairly quickly and seemed happy with them. But when they came to choose a book and tried to locate information within it, then the inadequacies of the questions they were asking themselves were highlighted.

The children were well aware of the need to choose keywords and had little difficulty deciding that BIRD was the right word for searching the subject index, but choosing keywords when searching for answers to their individual questions proved to be more difficult. Only one student said that the best keyword might not be in the original question at all. Most had trouble coming up with appropriate terms. Here is a list of some of the questions they were trying to answer (to illustrate the difficulty).

How long does it take for the eggs to hatch? (No specific bird mentioned.)
Where do they live?
Which birds live in hot areas and which live in cold areas?
Which birds can camouflage?
What is a bird?
What do birds eat?

Keywords suggested for these included: *eggs, kinds, live, hot and cold areas, camouflage and eating*. Margaret was asked how she decided what keywords were:

'Well, if you're looking them up in an index... what they'd most likely come under...'

A few seconds later she tried to choose a keyword for 'What is a bird?'. After a long silence the following exchange took place:

PM: Now have you got a problem?
Margaret: This is a tricky one, yes I have... Well, look under *bird*, well if it was a book on birds, to look under *bird* would be a bit queer. Um,... could be...
PM: So how can you overcome that problem?
Margaret: Well, I could wipe the question out or...
PM: Would that be satisfactory... to you?
Margaret: Mmm, no. I'll keep it, but I've just got to think of another keyword... um, what is it, I think I'll put. *What*... (underlines *what, is,* and *it*). Okay.
PM: So you've chosen *what, is, it* as the keywords?
Margaret: Mmm, what is a bird.
PM: Okay. And you want to find those where? Where are you going to look for them?
Margaret: Um, in the book...
PM: In the book?
Margaret: In the index.

She later looked under W for *what* in a book index. Her finished work did not include the question.

However, other children asked the same question and found relevant information during the course of the interview. In each case they searched the contents, not the index, and found chapters called 'What is a bird?'. From this and other similar incidents, it appears that some search terms are suitable to table of contents searching and others are more appropriate to indexes.

A measure of the relationship between the questions asked and their use in finding information is found in the final work presented. Without taking account of the quality of the answers, it was found that only 48% of the questions set by the children during the interviews were answered in written work. Three children presented no written work at all. Eleven children supplied answers to questions different from those set during the interview. In these cases one wonders whether the information found became the information required.

We have implied that choice of appropriate keywords is critical. However it must be noted that some students found information without having any specific keywords in mind. These people scanned indexes, contents pages and the text for words that they recognised as appropriate. They met with mixed success. Although this approach is good when you have little knowledge of a subject since it helps you sort out keywords, it does demand time. One boy, Brian, resorted to random scanning and was dismayed by the size of some books. He commented that the index in one book was 'a bit big, it would take too long to scan'. Sadly, he did not seem willing to use an alternative strategy.

The books themselves

When children approached the individual books, some expected to find their chosen keywords in the titles. Thus one child looked at the 35 books on the shelf and hunted for one called 'What Birds Eat', another searched for 'Eagles'. Others looked, more successfully, for 'New Zealand Birds'. This allowed them to disregard

many books and to quickly find the right ones. However, searching for a specific word in a title sometimes led to the conclusion that the topic was not included in the school library. Children need to be able to change the focus of their search terms from general to specific and vice versa often during the information seeking process.

Most children selected books on the basis of title and cover illustration. Having chosen a book they then had to search for answers to their questions. Apart from the problem-solving difficulties encountered in deciding where to look next and what does it mean if the chosen search term cannot be found in a book, there were specific problems inherent in the books themselves.

Some books had a table of contents but no page numbers! Some had no contents or indexes, and one had what appeared to be a good index but its illustrations extended to the corners of the pages and many page numbers had been omitted. Thus for the child seeking page 26, the nearest number was 19.

The good news is that overall, nearly two-thirds of the children's search terms were matched in books. The bad news is that matches often led them to irrelevant information. This raises the question of the adequacy of indexes in children's reference books. One writer suggests that in the ideal situation, indexes would be constructed by those having (a) good subject knowledge, (b) some training in indexing and (c) knowledge of cognitive development of those for whom the book was intended. She suspects that where children's books are concerned, these criteria are not met. They were not in our experience.

Children as information seekers

This small study has served to uncover several basic perceptions that interfere with children's ability to look things up for themselves.

Firstly, at the systems level, although the children could often explain what the Dewey system is supposed to do and how one goes about using it, their understanding of the relationship between Dewey numbers, catalogue cards and the books on the shelf was not sufficient in practice. Actual location of the right section of shelving was clearly hampered for a third of the children by the perception that the shelving was continuous, rather than being organised in bays.

Further, tables of contents and indexes were often of poor quality and children did not seem aware that they demand different strategies for efficient use. For example, a contents page is perhaps best scanned from top to bottom for specific and related keywords, while an index is 'spot checked' and rarely scanned in its entirety.

Secondly, information-seeking demands sophisticated thinking skills, from the moment of trying to turn a category like BIRDS into a set of questions (which will drive the information quest) right through to extracting the relevant information from the printed page. It was clear that to be successful and efficient information-seekers, the children needed to constantly monitor information-seeking strategies, to evaluate the information they found in light of prior knowledge and to express their information needs in terms compatible with the way the information is stored – in this case a library system and the books to hand.

One gets the impression that we teach library and information skills as if the system and the resources meet some ideal criteria. We may need instead to say, 'No, books are not perfect and library classification systems are over stretched and inconsistent but here are some ways you can overcome the problems within them.'

It is sure to be useful to check children's perceptions by asking them how they think books are arranged on the library shelves, how many books they expect to find on the shelf if there is one card in the subject index and what do they do when the word they were looking for in the index (catalogue or individual book) is not there. Classroom brainstorming to generate search terms and define the topic they are to research will help the children and could also reveal the extent of their difficulties.

This study has challenged many assumptions about children as information-seekers. The thinking skills necessary to finding information should not be underestimated. But that is not an argument to abandon 'projects'. Thinking skills can clearly be fostered in well-supported project work. Our study looked at only the initial stages of project work. Note-taking, integration of information from several sources, and the demands that presentation makes are being examined by Penny Moore in further research.

Some of the difficulties associated with finding information were not really apparent until the children tried to use the system and the information found. Therefore library and information skills may be best taught when completely integrated with all subjects. Thus information seeking can be followed through, from conception of the information need, to final use of the material found. A project on Birds should not be just for library skills, but part of the science, writing and art curriculum. The thinking skills associated with independent resource use may thus be fostered through all subject areas.

Notes

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Dr Alison St. George is a senior lecturer in the Education Department at Massey University.

The children in this study ranged from 10 years 9 months to 12 years 6 months and included 11 girls and 12 boys. The names here are not their real names.

The writer who was not optimistic about indexes in children's books can be found in

Miller, B. (1980) Indexes of children's books in Australia: A second look, *The Indexer*, Vol. 12, No. 1, pp. 29-33.

Other problems associated with using indexes are detailed in

Beal, C. (1980, Sept.) *The users of indexes*. Paper presented at the ASLIB/IIS/LA Joint Conference, Sheffield, England.

For more information about information skills teaching see:

Avann, P. (ed.) (1985) *Teaching information skills in the primary school*, London: Arnold.

Irving, A. (1985) *Study and information skills across the curriculum*, London: Heinemann Educational.

Other researchers' experiences of project work with children of the same age are given in

Lunzer, E. and Garner, K. (1979) *The effective use of reading*, London: Schools Council Publications.

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OWNING YOUR OWN WRITING

By **David Philips**
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AS WE WRITE we construct knowledge, we manipulate information, we develop ourselves, and we get, as a bonus, the pleasure of authorship. Our writing develops and we use it for a wide range of constructive purposes, including learning.

This present day view of writing is in sharp contrast with the older practice which, in fact if not in theory, saw writing as useful only for getting facts down or for testing what had been learnt in examinations.

The new look also notes that writing has social functions and value, and that it is a personal skill which is acquired somewhat differently by each learner. The words on the paper, video screen, or tape recorder belong to, or are owned by the individual. This article presents some of the more influential views which have helped to bring about this change, and shares some of the findings of a recent research study which Anne O'Rourke and I carried out as part of the New Zealand Writing Project, entitled *Responding Effectively to Pupils' Writing*. Among other things, it looked at how teachers make sure pupils own their own writing.

Writing-process writing

During the early 1980s Donald Graves popularised the notion that children could learn to write more effectively if they followed the same processes as real writers. As a result, through his research on the writing of children aged six to ten years in New Hampshire classrooms he developed an approach to the teaching, learning and evaluation of writing based upon his observations which culminated in the book **Writing: Teachers and Children at Work**. According to Graves, writing consists of the following stages: PRE-WRITING, in which activities related to a particular topic are generated as an aid to determining content and form, often with topics being chosen by the children themselves; DRAFTING, in which a first attempt is made to create a text exploring the topic already discussed in the pre-writing phase; REVISING, when the first draft is changed, either through the author's own efforts, or through peer consultation, or through conferencing with the teacher – at this stage, proofreading is especially important; and PUBLISHING, when the writer's text is made available to a wider audience in a suitable format.

Other important aspects of the writing process include: MODELLING, for example, the teacher might write with the children; SHARING, when extracts or whole pieces at various stages might be read out to the rest of the class, or a group, or a peer; CONFERENCING, when the author's text is closely examined by others to help with improving the text; and EDITING, when the final version of the draft is prepared for publication. These stages, in general, are viewed as mirroring the stages which real writers go through when preparing a piece of writing for publication, although every writer undoubtedly varies in the relative emphasis placed on different stages of the writing process (see, for example, the *Paris Review Writers at Work Series*) and may actually omit some of the activities enshrined in Graves's teaching plan. Graves, then, has attempted to blend what 'real' writers do with his interpretation of how children best develop their writing, in order to create a coherent approach towards the teaching of writing.

The importance of such an approach is that it places special value on what the writer (or author) brings to the process and how individual experiences, perceptions and preferences can become essential ingredients. As a history of writing teaching would reveal, teachers can encourage the development of writing in various ways and with varying degrees of success. Once there was the rote learning of rules, later exposure to the writings of published authors was important; once the teacher directed the choice of topics and made formal evaluations but recently pupils have been free to choose topics and are encouraged to make self-assessments.

One of the strengths of the so-called 'process writing approach' (despite the awkwardness of this term) lies in its recognition of ownership, i.e., that each writer 'owns' her own writing and that it should only be changed, if at all, by the writer. This can come after consultation or negotiation with the teacher or other children, but does not come as a result of decree by the teacher.

A Research Study

How individuals' ownership of their own writing (and hence learning) is respected and encouraged by teachers of writing (in both primary and secondary schools) is one of the key themes of the *Responding Effectively to Pupils' Writing* study which was completed early in 1989.

This research project, co-ordinated by the New Zealand Council for Educational Research on behalf of the Department of Education, set out to examine how successful New Zealand teachers of writing respond to their pupils' writing at various stages of the writing process. We wanted to find out how pupils were encouraged to write, and to document some of the techniques or strategies used by effective teachers. We hope that the record will be of practical value for other teachers and eventually form part of the basis for in-service courses. The study illustrates the extent to which Donald Graves's approach has influenced New Zealand teachers, although the research project was not carried out with this intent. We also discovered many variations in teachers' handling of different stages of the writing process.

We began with an extensive consultative process, including detailed interviews, which were carefully transcribed, with over 60 teachers. In the second half of 1988 five teachers were chosen for observation from five different levels, 25 in all: J3/Standard 1 (Year 2), Standard 4 (Year 5), Form 2 (Year 7), Form 4 (Year 9) and Form 6 (Year 11). Most of the teachers were women and taught in large urban areas such as Auckland, Wellington and Dunedin but a few teachers in small town or rural areas were included. We also wanted to be sure that the pupils in these classes were reasonably representative of the different ethnic groups which live in New Zealand, so most of the classes, including those in Dunedin, had a high proportion of Maori and Pacific Island pupils as well as children from European or Asian backgrounds. Each teacher was observed for several hours in their own classroom, and detailed notes made of the techniques used by the teachers when responding to the various writing activities.

A comprehensive research report, called, naturally enough, *Responding Effectively to Pupils' Writing*, describes the teaching of writing at each of the five levels, focussing upon these aspects:

(a) the teachers' views of, or approaches towards, writing (e.g., how each teacher interpreted the writing process);
(b) classroom management (e.g., layout of the room and kinds of groupings used);
(c) how teachers responded to different stages of the writing process (e.g., drafting, modelling, proofreading, conferencing, sharing, publishing);
(d) the kinds of evaluation and feedback employed (e.g., oral and written feedback and use of marks/grades or descriptive comments); and
(e) the assistance provided (e.g., in relation to spelling, punctuation, voice and ownership).

Also, overviews, summarising the teaching of writing across the three primary levels and across the two secondary levels, are included.

How, then, did the teachers encourage pupils to develop their own writing? How was the writing kept consistent with individual experiences, perceptions and preferences? How were the pupils encouraged to become authors in their own right, and to maintain ownership of their writing? At least nine practices can be identified which assisted in this process.

1 *Pupils were encouraged to express their individuality*

Each teacher was aware of the need to preserve the individual voice of the pupils. They saw writing as the principal means by which personal ideas and experiences could be conveyed and that these should be written down in the pupils' own style. All teachers acknowledged and respected the point of view of each child in their class, irrespective of cultural background, and pupils were encouraged to develop confidence in expressing their own voice in culturally appropriate ways. What the pupils themselves wrote was highly regarded, and not given secondary status within the classroom; so, for example, the writing of other pupils was often a source of reading material, the children read each others' writing, and not just extracts from published, professional authors. All teachers agreed that it was essential to come to know each pupil as a unique human being; each person has his or her own rate of development, as much in writing as in any other aspect of language acquisition; we each have our own preferences. The 'process' approach to teaching writing emphasises the various stages and activities involved and was thus regarded as particularly helpful in meeting these requirements. All the teachers assured the children the right to write without fear of intrusion or interference.

These beliefs were not confined to the primary teachers. At the fourth form level (14-year-olds) for example, one of the main concerns of all the teachers was to enable the students' personal voice to emerge through their writing. They said that it was very important to empower students by giving them the necessary skills and opportunities to communicate their ideas, feelings, attitudes and reactions. For this to happen, students need to feel trusted and to trust, to feel secure and unthreatened in the expression and sharing of themselves through their writing. Consequently, writing instruction was personal in orientation, reflecting the needs of the individual pupil.

2 *Original or personal ideas were drafted first*

Drafting, or getting ideas and experiences down on paper, was regarded as the foundation of writing, the creation of the raw material from which a satisfactory piece of publishable writing could be forged. In all classes the teacher assisted by providing a supportive environment. They wanted to allow drafts to be produced in a way with which pupils felt at ease so that they contained their own ideas or, if the ideas of others, were expressed in their own style. Many teachers, therefore, regarded a period of 'sustained silent writing' as an essential part of the process. During this time they avoided interacting with their pupils or, for those requiring urgent assistance, kept it to a minimum. Often, this private writing time would last from 10 to 20 minutes, and was seen as giving pupils a space for withdrawing inside their own minds to get in touch with their own imagination, thoughts and emotions. In other classes, including those with a high proportion of Maori and Pacific Island students, total silence was not regarded as culturally appropriate and pupils were able to share ideas with each other as they composed their drafts.

In order not to impede the flow of ideas, particularly with younger writers many of whom might well have struggled to produce even a single line of text, risk-taking practices were encouraged: pupils, for example, often attempted the spelling of words they were unsure of. Checking up in a dictionary or thesaurus could be done later once sufficient ideas had been put down on the page. This practice was observed frequently at the secondary level, too. Drafting time was also seen as an opportunity for pupils to rearrange their ideas in different ways, with no penalty attached to crossings out or a tangle of lines indicating changes of order, or insertions of new words or phrases. Of course, pupils differed widely in their revising practices with many making comparatively few if any changes to an initial draft, but the scope was there for pupils to put their initial thoughts down in a relatively unrestrained fashion.

3 *Choice of topics was often left up to the pupils*

Writing was seen as coming from within the pupil, though influenced and often changed by discussion or through reading what others had written. So ideally the ultimate choice of topic and the selection of ideas belonged to the pupil. However, it was apparent from this study that the further through the school system pupils moved, the fewer

opportunities were available for choosing writing topics. In no class were pupils free to choose their own topics at all times; in fact, many teachers said that total freedom limits pupils' writing development, especially if pupils write the same kind of material ad nauseam and fail to experiment with other types. Also, every class had some pupils who had difficulties in generating their own ideas. The teachers were always happy to provide assistance if it was required.

Most of the junior and middle school teachers allowed a lot of topics to be chosen freely, and in some classes pupils almost always chose their own topics, usually drawing from their own experiences or classroom activities. But by intermediate level 11- and 12-year-olds were required most often to write on topics chosen by the teacher. In the secondary school pupils were rarely allowed to choose their own topics. In one fourth form (Year 9) class, however, pupils were encouraged to make a list of their own ideas and chose their own topics for creative or personal writing. This teacher alternated pupil-chosen with teacher-set writing. In secondary school when the writing was on literary topics, though the subject was set by the teacher, there was often choice among a range of options, and the pupils frequently had the opportunity to handle topics in their own way. The principle of ownership, therefore, was not lost sight of and, in at least one other class, pupils could negotiate with the teacher and write on a personally chosen topic even when the teacher had assigned a topic for the others.

4 *Modelling was only used when judged appropriate*

In theory, although modelling of various kinds was regarded as a useful technique to employ in order to show pupils how to go about writing (especially at the drafting and proofreading or editing stages), in practice most of the teachers preferred not to model the act of writing in front of their pupils. Junior and middle school teachers did occasionally write their own stories alongside the pupils, and read them out, but this was not a common practice. Models in the form of extracts from published writers, however, were often used.

The teachers were concerned that modelling would influence the students' own practices, and that it might lead to a loss of personal voice and individuality. Some teachers, for example, felt that pupils would imitate the teachers' models, thinking that how the teacher went about the act of writing must be how everyone should write. They might even take up the teacher's topics and ideas. Others thought that individual creativity would be stifled because of an unwillingness by students to take risks, worried that their work would not be up to the same standard as the teacher's.

Pupils' ownership of their writing was considered more likely to be preserved, therefore, if demonstrations of the various stages involved in writing and the guidance offered were less direct. Direct help should be designed in response to individual needs. Most of the teachers were very reluctant to increase feelings of incompetence or lower confidence among their pupils, and hence preferred to avoid situations where examples of their own writing practices, however unintentionally, could take precedence over their pupils' own development as writers. However, it was interesting to observe considerable variation among teachers in their use of modelling. Whether teacher demonstrations of the act of writing were actually beneficial to some pupils and harmful to others remains an unresolved issue.

5 *Conferencing was integral to pupils' development as writers*

Various kinds of conferencing took place in the classrooms. These ranged from brief dialogues with pupils, in response to individual needs, while the teacher was moving about the classroom (roving conferences) to more formal, often timetabled, one-to-one conferences after pupils had already prepared a draft and discussed it with other pupils (individual conferences). All types of conference were regularly used in secondary as well as primary classrooms, with the occasional exception.

Generally, in offering assistance, irrespective of the kind of conference involved, the teacher supplied suggestions which the pupil was then at liberty either to accept or to reject. However, these suggestions were most often in response to a pupil's comment or query; they were not just the teacher's view of what was appropriate. As a result, ownership of the writing remained with the pupil. In the classrooms we observed and these were the classrooms of successful teachers, no attempt was made by teachers to impose their ideas directly on the pupils or to change what the pupils had written without the pupils' approval. Of course, pupils frequently accepted the suggestions offered, but without feeling that their ownership was in any way compromised.

The one-to-one conferences were designed to facilitate a close working relationship with each pupil. Through them individual needs and each pupil's writing development could be monitored. In most cases, the initiative for having a conference remained with the pupil, and at certain levels such as intermediate and secondary the content of the conference was also the pupil's responsibility. These conferences, often occurring on a weekly basis, served as a secure framework within which ideas and language matters could be explored with the teacher by the pupil, without the pupil losing her personal identity or sense of control over the writing. In the primary classes, emphasis was placed on ownership and control of the writing by the pupil, so the thrust of the conferences tended to be positive, with questions and comments designed to allow pupils to describe what they were trying to do in their writing and to have time to respond to the teacher's remarks.

Similarly, in the secondary classes the student's voice and ownership of the writing was respected by each teacher and the responsibility for the final text was left with the student, even when a teacher, occasionally, made relatively exacting editorial changes. Generally, changes were suggested which preserved the message of the writing the way the pupil wanted to express it, while removing errors that could detract from that message being received by its intended audience. The conduct of conferences is an art in itself requiring careful questioning and a willingness to listen carefully; there could be a whole item in conferencing alone.

6 *Proofreading and editing were encouraged*

At all levels prior to an individual conference pupils were expected to have proofread their piece of writing very carefully, and, as far as possible, to have carried out this process by themselves. However, assistance from peers, in addition to self-checking, was an integral part of this activity in some classes. During the conference and afterwards when final editing changes were being made accurate language and clear organisation of content were expected particularly if the writing was to be published. The

final decision as to whether to publish or not was left to the individual pupil. Any editing changes suggested by the teacher were done with the conscious intention of preserving the writer's voice so that the ownership of the writing remained with the pupil; as with the previous stages of writing, any writing done was considered to be the pupil's property.

7 *Publication was left in the pupils' control*

Ultimately, the goal of writing was sharing it with a real audience; in most cases, this meant with the teacher and the rest of the class. At the primary levels, a vast variety of formats was used and pupils were encouraged to consider the presentation very carefully to match the purpose and the intended audience. Mobiles, wall displays, books (both little and large), posters, magazines, newspapers, cards, and computer printouts were all used at various times and displayed in the classroom.

Generally, apart from the youngest, the pupils themselves took responsibility for the publication of their own writing and could choose a format which, in their view, best matched the intent of the piece. Pupils themselves were able to choose which pieces to publish and when to publish; by no means all the writing done was published, although if a pupil was extremely reluctant to publish *anything* some additional encouragement was offered. At the secondary level, publication was considered important by all the teachers. Again, this was only if the student approved. Publication was seen as a source of motivation and as a reinforcement of ownership.

8 *Sharing with an audience was encouraged, but optional*

While publication was regarded as one of the principal means of sharing writing, both within the classroom and beyond it, sharing was done at all stages of the writing process from the initial discussion of ideas right through to reading out a finished piece to the whole class. Throughout the primary classes, various kinds of sharing occurred, with the aim of gaining feedback for the writer. While engaged in drafting or preparing for publication, pupils often exchanged comments and writing with each other, and in daily sharing sessions, those who wished could read aloud their stories or parts of stories, whether in draft or published form, to the rest of the class. Pupils were not compelled to read out their writing or to share ideas with others; ownership was protected in this respect, too. At the secondary level, the sharing of writing at all stages of the process was also regarded as essential and an integral part of the act of writing. If they wanted to, secondary students shared their writing; this occurred in most classes at the fourth form level, although at the sixth form level (Year 11) sharing was more often of an informal and private nature.

9 *Feedback and assistance were individually targeted*

Perhaps the most important way of ensuring that pupils retained ownership of their own writing (at both the primary and secondary levels) was in the kinds of feedback and assistance offered by teachers. To begin with, any assistance offered (apart from individual conference time, which was relatively structured) was couched in positive, affirming terms, and in response to a pupil's request. Apart from pupils who were floundering and uncertain about what to do at all, most requests for help were in relation to an aspect of their writing which the pupils perceived themselves to be unable to resolve. The assistance offered was generally non-intrusive, carefully tailored to the needs of the individual and offered without encroaching upon pupils' voice or ownership. Even when written comments were made in response to published writing, as part of a more formal evaluation of pupils' work, these were often made in a way which preserved the sanctity of the writing, either by being lightly made in pencil, or on an entirely separate piece of paper from the actual published piece. Such remarks, too, were generally appreciative rather than critical.

The teachers were facilitative rather than interventionist. They extended this attitude to the treatment of more formal aspects of language use, such as spelling, punctuation and grammar. In the primary classes, 'attempted' or 'invented' or 'approximated' spelling was encouraged at the draft stage, but accurate spelling was expected in published pieces; this was supplied if necessary by the teacher. Individual needs were taken into account over both punctuation and grammar; all the teachers believed that an over-insistence on correctness could destroy the pupil's cultural voice and that drawing attention to it required great sensitivity. In the secondary classes, spelling, punctuation and grammar were not 'taught' but treated in context – as points came up in an individual's writing. In this way the assistance offered was specifically targeted towards the particular difficulties experienced by the pupil.

Conclusion

The classroom practices reinforced the view that all writing belongs to the pupil as author. This applied to the free choice of topics (especially at the lower levels of the primary school), to the choice of ideas conveyed, to the choosing of the focus for the individual conference, to electing to share with the rest of the class or not at all, to deciding whether to publish or not and in what format. Generally, the assistance offered was conveyed in such a way that pupils were not forced to change what they had written, but rather were invited to consider other possibilities and to accept or discard them as they wished. The teachers whose teaching of writing we studied were chosen because they had been so successful. They used the strategies detailed here and these were observed in all the primary and secondary classrooms participating.

Notes

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The reference to Donald Graves' book in full is:
Graves, Donald, *Writing: Teachers and Children at Work*, Portsmouth, NH: Heinemann, 1983.

The Paris Review Writers at Work Series is available from Penguin Books. There are now several volumes in this series and as accounts of how writers go about the act of writing make for fascinating reading.

Differences from level to level in strategies and success are detailed in *Responding Effectively to Pupils' Writing*.

Responding Effectively to Pupils' Writing is available from:
Distribution Services, NZCER, Box 3237, Wellington, New Zealand
and was written by Anne O'Rourke and David Philips in 1989.

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On Being Insane in Sane Places

By **David Mingay**
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I HAVE recently carried out a quasi-replication of Rosenhan's famous experiment in 1973, 'On being sane in insane places'. Most social scientists will be familiar with this, but for those who are not, here is a brief synopsis.

Rosenhan queries the reliability of diagnoses that stem from professional definitions of sanity and insanity, particularly the question of whether the 'characteristics of sanity and insanity reside in the patients themselves or in the environments and contexts in which observers find them' (p. 250).

Psychiatrists have generally assumed that mental illness is a 'thing' which people either do or do not 'have', claiming that patients present symptoms which can be categorised, therefore distinguishing the sane from the insane.

Rosenhan believed the reverse. He maintained the categorisation was not an objective process, but that psychiatric diagnoses are in the minds of the observers resulting from the patients being found in mental institutions.

Of course, one can easily find out which is true. It is simply a matter of presenting sane people in such a context and discovering whether they are diagnosed as they are (i.e., normal) or in terms of their environment (i.e., mad).

Rosenhan carried out such an experiment. Nine 'pseudo-patients', including three psychologists and a postgraduate psychology student, presented themselves at a variety of psychiatric hospitals. Apart from a false identity, the only misinformation the subjects gave was that they had been hearing voices which repeated three indistinct words: 'empty', 'hollow', and 'thud'. Everything else was presented accurately – their life history, relationships with spouse and children and so on.

In hospital, they behaved normally. However, in spite of this, they were all diagnosed as mentally ill, either as schizophrenic or as manic depressive.

Interestingly, the only people who recognised that the subjects were perfectly sane were the real mental patients. For example, the subjects constantly kept notes of their experiences. The staff dismissed this, recording 'Patient engages in writing behaviour'. However, one inmate commented, 'You're not crazy. You're a journalist or a professor.'

Does the converse hold?

It is clear though that, for Rosenhan's assertion that the environment is the major factor in diagnosis to be true, then the reverse must also be shown to be true. If an *insane* person presents herself or himself at an institution populated by 'normal' people, she or he should also be diagnosed in terms of her or his environment – that is, as perfectly sane.

The present study attempted to find out if this is the case.

The most salient data from Rosenhan's study came as a result of including a postgraduate psychology student as one of the subjects. Thus, I arranged for the following:

Eight mentally ill subjects presented themselves as post-graduate students at the psychology departments of four Irish universities. Apart from stating that they had an honours degree in psychology, the 'pseudo-postgraduates' were otherwise truthful and behaved in what was for them a normal fashion.

All the mental patients were admitted, having been 'diagnosed' as perfectly normal academics.

As in Rosenhan's experiment, the only people who saw through the pseudo-postgraduates were the real post-graduates. The pseudo-postgraduates also took copious notes of their experiences. Writing behaviour was highly unusual amongst real postgraduates and this led to comments such as, 'You're not a postgraduate. You're a loony.'

Other parallels are legion. Bearing in mind Rosenhan's statement that, 'psychiatric diagnosis... locates the sources of aberration within the individual and only rarely within the complex of stimuli that surrounds him... behaviours that are stimulated by the environment are commonly misattributed to the patient's disorder' (p. 254), readers may like to compare the following scenarios:

One psychiatrist pointed to a group of patients sitting outside the cafeteria entrance half an hour before lunchtime. To a group of young residents he indicated that this was characteristic of the oral-acquisitive nature of the syndrome. It seemed not to occur to him that there were very few things to anticipate in a psychiatric hospital besides eating (Rosenhan, p. 255).

One professor pointed to a group of postgrads sitting outside the public bar entrance half an hour before opening time. To a group of young lecturers he indicated that this was characteristic of the oral-acquisitive nature of the syndrome. It seemed not to occur to him that there were very few things to anticipate in a psychology department besides drinking (present study).

Is the following a description of a psychiatric hospital or a university psychology department?

Staff were... unobtainable. They were rarely seen and quite commonly were only seen when they arrived and departed, with the remaining time being spent in their offices. (In fact, Rosenhan, p. 256).

When staff members could be located, Rosenhan's subjects attempted to initiate experimental conversations in order to look at the types of responses they got. Again, similarities with the present research are uncanny:

Pseudo-patient: 'Pardon me, Dr X. Could you tell me when I am eligible for grounds privileges?' Physician: Good morning, John. How are you today?' (Moves off without waiting for response.)

Pseudo-postgraduate: 'Pardon me, Dr X. Could you tell me where I can find a corkscrew?' Supervisor: 'Good morning, em... er. How are you today?' (Moves off without waiting for response.)

Is this credible?

It may seem incredible that psychologists could believe mental patients were really postgrads. Another experiment (again, after Rosenhan) was arranged at one department whose staff had heard these findings, but doubted that they could make such an error. They were informed that at the beginning of the next academic year one or more pseudo-postgraduates would apply to do research for a higher degree. Despite no pseudo-postgraduates presenting themselves, all 180 applicants were judged in some way mentally ill. Indeed, the staff deemed that the 40 real post-graduates were also insane, although this fact is hardly surprising.

In conclusion then, the present study supports Rosenhan – it *is* impossible to differentiate between the sane and the insane, especially in the psychology departments of our universities.

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MENTAL HEALTH WARNING

We hope you enjoyed this not *altogether* inplausable piece. Psychologists will recognise the style and the rest of us can only wonder. This article first appeared in *The Psychologist* (Vol. 2, No. 2, 1989), the journal of the British Psychological Society, under the heading 'The Lighter Side'. Rosenhan's experiment is well known and authenticated. It can be found in *Science* 179, pages 250–258. For Mingay's experiment we have found no corroborative evidence. David Mingay is, we understand, a post-graduate student at Trinity College, Dublin, though whether the professors are able to differentiate him from the floods of pseudo-graduates from nearby psychiatric hospitals we are unable to say.

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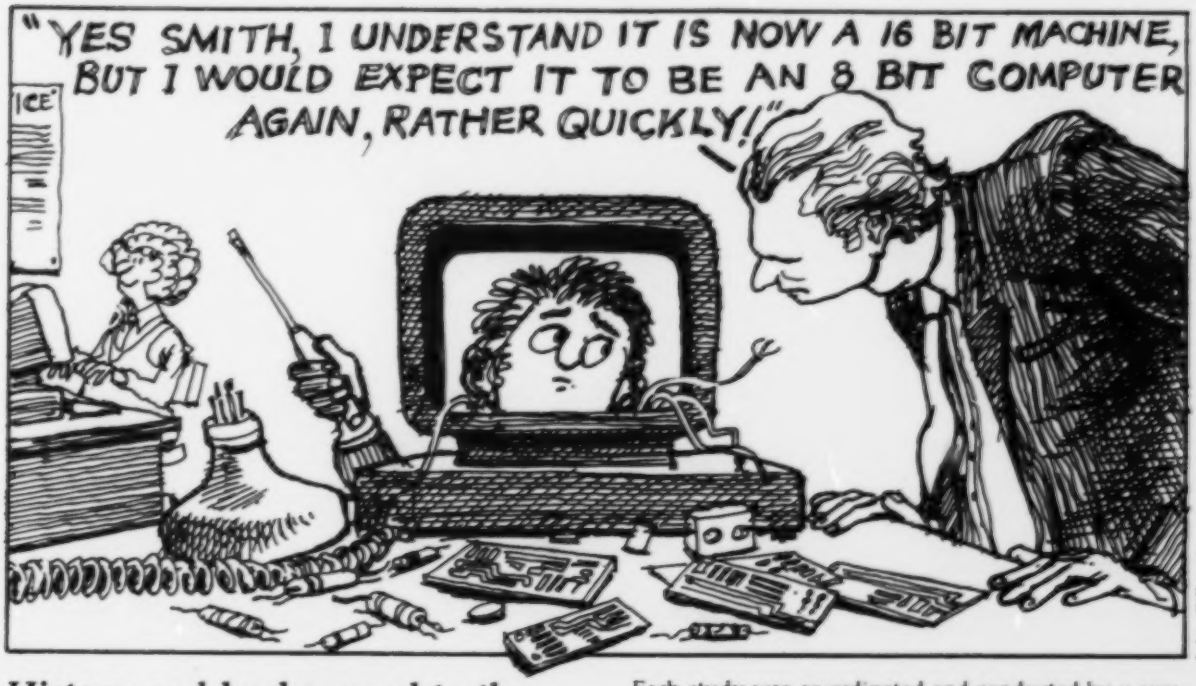
Exploratory Studies in Educational Computing

By Dave Atmore and Barbara Craig
NZCER



John Gillespie

History and background to the studies

THE EXPLORATORY STUDIES in Educational Computing (ESEC) are nominally 15 studies, (actually 19) set up at the request of, and funded by, the Department of Education.

The studies were originated in a rather unusual way. It was announced in the *Education Gazette* in July 1985 that a substantial sum of money would be set aside to fund original work in the area of school computing, with a view to developing policy. Proposals were called for, and at a conference in November 1985, 19 were selected from the more than 100 proposals submitted. A broad range of schools was to be represented – rural and urban, from different socio-economic areas, from multicultural to monocultural settings, etc.; also, as many differing types of computer application as possible, with a bias for children using computers rather than administrative uses.

The Department's CEDU (Computers in Education Development Unit) was given the task of co-ordinating the tendering for equipment, the setting up of hardware and software, and The New Zealand Council for Educational Research was asked to oversee the evaluation of the studies. Our task became, therefore, concerned primarily with data collection and analysis.

Each study was co-ordinated and conducted by a committee comprising the teachers involved (who are generally the originators of the study), one member of the CEDU, one member of the NZCER, and often other educationalists.

In general the studies began during the first term of 1986, and were scheduled to end by 1988. Reports are being produced at various stages, and a final detailed report will be produced by NZCER. A policy recommendation report was produced by the CEDU in 1989.

A set of research material was prepared for all the studies and included general pre- and post-study questionnaires for students and teachers, also logs and diaries to record day-to-day activity. Study-specific instruments were prepared where necessary, and standard psychometric tests were often used to help build general background profiles. A lot of the data is, however, of an anecdotal nature, and in general the studies were not designed as experiments to test strictly defined hypotheses but are rather more case-studies.

Research process and management

Ostensibly, a major objective was to formulate policy. All involved in the studies made a conscious effort to bear that in mind. However, there were, of course, differing personal agendas, which sometimes conflicted.

The point of view of some of the teachers was dominated by the fact that they had at last found a way of financing computers into their classrooms. Often they knew very clearly what things they wanted to try out, and they could evaluate quickly and informally whether their ideas were working. From the teachers' point of view, if something was not rapidly and obviously benefiting their pupils, it was not only not worth persisting with, but may even have been positively incompatible with their primary objective of being a good teacher. On the other hand, some teachers, who were persuaded into participation, were initially reluctant, even fearful of the new technology. By the end of the study, they were generally unable to imagine their classroom programme without a computer.

The Education Department staff, apart from gathering data to support a policy document, were keen to actively promote a diverse use of computers in schools, choosing activities based largely on their own experience as teachers. Another important part of their job involved conducting in-service courses for teachers on any topic related to computing that either identify as important and relevant. They were not therefore interested in academic research so much as in establishing a body of practical experience.

Our interest as researchers at NZCER was of a more traditional academic research nature, which meant that the collection of data, the measurement of attitudes and abilities, and any changes in these, and the detailed description of exactly what was done, to whom and when, was crucial to our task of writing research reports.

Naturally, the three different perspectives on what is important, could lead to conflict. Gathering data is a laborious task for teachers whose time is already fully occupied. And no teacher for the children's sake could afford to let their part of a study 'fail' – it needed to produce some fairly immediate and obvious benefit to the pupils. Nevertheless, teacher 'ownership' of the research achieved a much higher level of motivation in already-overworked teachers than would something imposed from outside. The common ground from the three perspectives was the value of assembling a body of empirical knowledge on how to use computers in the classroom. Certainly this will be the major long-term benefit from the studies.

What is 'educational computing' anyway?

Historical trends

The predominant thinking of those who want to use computers in the classroom, as to why they would do so, has undergone a few dramatic changes over the last decade or so.

The currently favoured ideal in the classroom use of computers, is to promote the use of 'open-ended' software, where the child controls the program (rather than the other way round). The prime examplar of this category is word processing, where the form and style of the prose is not in any way prescribed by the software. The computer becomes purely a productivity tool, with perhaps formatting and spelling verification thrown in as an aid. LOGO is also generally seen as falling within this category too, for although it is a more complex tool to learn to use, the user is free to decide what to actually produce with it. Interactive fiction, simulation games and other problem solving software are also generally put into this category, because although there often is a single correct solution the process of getting to this involves a range of cognitive skills, such as drawing maps, taking notes and making logical inferences and deductions, each different for each child.

In the early days, computers were to be found only in secondary schools, where they were used to teach mathematically able pupils how to write programs, usually in BASIC. We suspect that a lot of those machines are still out there, and still being used for that same purpose. However there has been a considerable reaction against that approach, with the recognition that the computer is a valuable productivity tool, (and in many more areas than mathematics). A significant number of non-maths teachers were simply determined not to be excluded from the new technology. After all, not all school pupils are going to want to get jobs as programmers, but everyone will come into contact with computers in their post-school lives.

Despite the saying 'nobody teaches programming these days' there are many LOGO enthusiasts. With a philosophy which is vaguely reminiscent of the 'mental discipline' argument for Latin as a school subject, the programming language LOGO, and especially the 'turtle graphics' aspect, is claimed to be cognitively good for the child, especially in the sense of helping them to learn about direction, angle, and scale. This stands in marked contrast to the idea that programming will never be a good 'mental discipline'.

Thus is raised the issue of *transfer of training*. At the drill and practice end of the scale it is supposed that learning spelling or arithmetic skills at the screen will transfer to 'real life'. At the LOGO and simulation or adventure game end, it is a much more abstract cognitive or 'meta' skill which it is hoped will transfer. No clear answers can yet be given by research about transfer at either level.

Another mode of use, with origins perhaps in behaviourist psychology is the 'drill and practice' style of software. At its simplest level, applied to arithmetic and spelling, this is of clearly limited utility, as it quickly becomes boring to the pupil, and rote learning is these days considered a very poor cousin to 'education' anyway. It still does however, have a limited place where, for some reason, 'worked examples' from a text book will not suffice, either because of the attention span of the child (even a boring computer screen can be preferable to a boring book), or perhaps where some animation can be used to advantage. For example, a teacher in one of the studies used an 'authoring language' to write an interactive and graphic program to teach playing positions for netball. 'Good' drill and practice software should contain a high level of interaction between the user and the program, and not be just an 'electronic textbook' – books are still generally cheaper to produce than computers. A further use for the computer as a tireless repeater of questions is the computer as examiner. Our experiments did not look into this but a lot of work is going on overseas. Short answer questions may soon be the prerogative of the computer, and the boring job of marking them will vanish along with desks in rows in the gym.

Why choose brand x?

Hardware: Computing in schools is dominated by 8 bit machines, (such as Apple II, Commodore, BBC) while the business computing scene regards anything less than 16 bits as falling within the 'toy' category. There are two major reasons for this difference. The first, and most important is price – school administrators budget in terms of hundreds, or even tens of dollars – not in thousands!

The second major reason is marketing: the 8 bit dealers aimed for the school market quite aggressively several years ago, and as well as relatively attractive pricing, they managed to convince teachers that they had cornered the market in 'educational software'. Those were the days before open ended (or content free) software was regarded as educationally superior.

Software: The software in common to these two computing worlds is undoubtedly word processing. Other than that, the kinds of software are very different. In particular, there is very little school use, below secondary level, of database and spreadsheet software, although use of database software is growing. Commercially available databases are of little direct relevance to pre-secondary pupils. Sophisticated concepts of data structure and organisation are unfamiliar to teachers, and cognitively very difficult for children, at least until intermediate level. However, some experience with using databases and database software may have a positive effect on these cognitive abilities, and two of our studies have been addressed in part to this possibility.

On the other hand, there is much which is specifically labelled as 'educational software' (mostly simulations and adventure games) available for the predominant 8-bit machines. Although teachers usually abandon most of it, this often provides an initial means of introducing the computer.

Data Collected

General demographic data

We have a somewhat atypical sample of schools because our selection ensured as wide a range of situations as possible. Participation from pre-schools, primary and intermediate schools was strongly encouraged, as it was felt that secondary schools were already at a relative computing advantage.

With the wide range of schools and the involvement of many sectors of the education world, the ubiquitous questionnaire has an invaluable place in the studies. The plan became slightly complicated by the fact that the studies spanned two years, which meant that approximately half the pupils involved in the studies in 1986 were no longer involved in 1987. Our solution to this problem was to administer a general 'second' questionnaire at the end of 1986. The 'final' pupil questionnaire was at the end of 1988. The general questionnaires (pupil and teacher) aimed to collect two sorts of information – demographic, knowledge and opinion. The 'post' versions of the questionnaires will examine how the latter has changed as a function of (more) experience. With data on over 2000 pupils and 100 teachers, and 19 studies ongoing, progress on analysing this mass of information has been slow, so we are still not able to report on very much of this.

Word processing

Most of the studies use the process or product of word processing in some way, and three studies are about it. They attempt to relate changes in children's writing (for example, organisation and ideas, spelling, grammar, editing skills) or attitudes towards writing, to their use of word processing. Reading and writing, the 'ability to communicate' is a major concern of teachers in the pre-secondary area. This concern is quite naturally reflected in the word processing related studies. Word processing software is the most readily adapted to all areas of the curriculum, language arts, the sciences, social studies, and children are using their classroom computers to work in all these areas. This is not so very different from the state of the computing world outside of the school. Word processing is the major use of microcomputers in general.

However, researches, like teachers, are faced with the difficult task of measuring the *quality* of what is written. Each study was set up with matched experimental and control case study pupils, the experimental children having regular access to a classroom computer, and the control children producing only pencil and paper writing samples. In addition, hand-written samples of writing were collected from the experimental children 'before and after' as a measure of whether any gains from the use of a word processor carry over into pen and paper writing. A measurement of quality is achieved by asking a panel of teachers experienced in process writing to evaluate the work.

The children, no matter what their level, have learned to work very independently at the keyboard. The greatest management problem the teachers have struck is how to devise a turn-taking system where only one computer has to be shared among 37 class members. In lucky classes there have been five computers and the problem is eased, but it does not go away. The children have enjoyed, most of all, being able to produce a final clean published version of their stories, and they say they are now much more willing to make changes to their work.

Data processing

There are no studies which use the traditional 'number crunching' aspect of computing, however two studies are concerned with data base applications. In one case children were given access to commercial databases (via Videotex), and in the other, pupils built their own databases, usually as part of their social studies, language work, and in secondary school, economics classes.

In the Videotex example, the teachers and children (aged 10 to 12) had to be very inventive in order to discover useful applications! Broadly, they achieved two goals: one is to physically map the database, producing a large wall chart which shows how the information in the database is categorised – the schema of the database. This wall chart could be consulted by pupils who were gathering information to find the shortest route from one 'page' to another. The second major goal was to extract useful information. This they have done, generally from the news, special features or sports sections; the relevant pages are saved, printed and incorporated into the school newspaper and project reports.

However, the amount of information of use to children at this age was limited, and continued use of Videotex after the study finished, was generally not justifiable on a cost-benefit basis. The exercise has, however, prompted the teachers involved to start thinking about how desirable an educational database would be, and the sorts of things they would like to see in such an entity (including, of course, a bulletin board facility). In some cases the exercise has prompted the children to see the general utility of the database concept, and to want to start building their own databases of 'really useful' information.

In fact, it may well be that the pupils using Videotex have a better appreciation of the applicability of database software than their peers in the other database study. The major finding of the study in which children built their own databases is that understanding of data concepts comes more through use than through theory. In the early stages teachers tended to start by 'teaching' about data and database concepts, describing the software (usually of the simpliest, non-indexed, non-relational flat file type), and setting up several artificial data collection and coding exercises. They could then ask simple questions of their databases, such as 'How many children in the class have brown hair?'. With hindsight, it is probably not surprising that many children failed to see the point of all this – a glance around the class would answer that question, and other answers to the superficial questions were obvious anyway. Worse than this, because the software was very general in scope and because the teachers were inexperi-

enced with data concepts, decisions about records and fields were often inappropriate and the database didn't really work anyway. Some teachers were able to turn the situation to advantage, and with their pupils, discover what not to do.

A much more profitable approach was to make the exercise 'research driven'. Much of the motivation for this approach came from what was almost an 'add-on' to the project – the use of telecommunications (Starnet in particular). The original intention for this was that children could swop databases over the phone link, or perhaps contribute to some larger centralised database. Given that they were all collecting slightly different information, it is difficult to see how contributing would have worked, but in any case the transmission of large amounts of data was rapidly ruled out because of the expense. What did turn out to be practicable was for children to use Starnet purely as a mail system, and in one case, a rural Gisborne school began communicating on a regular basis with schools in Alaska and Oregon, although the bulk of the communication now goes by airmail, not electronically.

The sorts of questions which children often asked one another via Starnet (usually about what it's like to live in Invercargill, or Anchorage Alaska), often provided the prompt for a project of local demographic data gathering, and much of the data could often usefully be stored in a computer database. In general, successful application areas for database software were in social studies, and in secondary school economics. In these cases, the first step was the teacher seeing the potential application of a database, or at least a computerised filing system, and then, with guidance, the children made the decisions about record structure. The data collection process however was 'research driven': they had a list of questions about something to start with.

LOGO

Two studies in particular focussed on LOGO, the programming language invented by Seymour Parpert, and reputed to have almost mystical powers for cognitive development. In fact LOGO is just a part of an educational philosophy which does not fit particularly well into a curriculum-driven education system such as we have in schools. There is surprisingly little information available for teachers on the practicalities of how to use LOGO in the classroom, and both of our studies rely on work by Ryba and Nolan from Massey University. This work divides the turtle-graphics programming aspect into stages of complexity and has certainly been useful for documenting children's 'progress'. One study focused on the effects of experience with LOGO on children's spatial abilities, and the other study focused mainly on aspects of geometry. In fact the latter study moved on into an examination of the ability of teachers to use LOGO to teach certain aspects of geometry. This is in part because the teachers are not free to simply sit back and see if LOGO happens to improve their students understanding of geometry; they have syllabuses to stick to. The spatial relations study does take more of a laissez-faire approach, perhaps because the children involved are generally younger (9- and 10-year-olds), but largely because 'spatial relations' is not directly part of the school syllabus.

Special and remedial education

There are three studies specifically addressed to using computers with visually and hearing impaired children. These look at changes in social and language development whilst the children interact around the computer. They use both graphics and word processing software.

Quite a few children have attitudes towards themselves, their peers, school and school work which are seen to be in need of some adjustment. In some cases these children are (or should be) in remedial reading classes. A wide range of software was made available to these children, including some word processing and LOGO, but mainly simulation and adventure 'games' and interactive fiction. With this sort of software:

a) children can work together in groups, thus increasing their social interaction skills;
b) the software generally provides some exercise in logical thinking, and
c) is it usually necessary to make notes, or to draw plans, in order to succeed; choices at one point in the program need to be based on information given at earlier points.

The long-term question of course, is whether these skills, which are in fact developed with help from teacher and computer, will transfer to other situations, and stand the test of time.

In some cases, children lacked confidence and English oral skills, both of which are necessary for fruitful participation in the classroom. Interactive computer simulation activities were used to help develop group language skills. Interactive fiction became the basis for a fully integrated curriculum in these classrooms and was the stimulus to group artwork and writing away from the computer as well. Participation in group work was measured by independent classroom observers, and a checklist of listening, expressing, questioning, decision making, reviewing, and negotiating skills was developed for the classroom observers to use. The results have yet to be analysed, but we expect that it will take at least three school terms before we can discover any measurable improvement. Some changes, however, were noted by the teachers in their weekly diaries. At every level, and not just in the target children, teachers sensed an increase in self confidence and self esteem. This came hand-in-hand with a mastery of oral skills and in turn created much more co-operative classrooms.

Notes

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More detailed information on the questionnaire data and other measures is available to researchers from the authors.

Final reports on the studies:

Study 9: *The Impact of Microcomputers on Teachers and on the Observable Behaviours of Children Aged Four to Seven Years.*
Study 12: *Collaborative Word Processing.*
Study 13: *The Computer as a Diagnostic Tool in Mathematics.*
Study 8: *Using the Microcomputer to Support Students Who are Performing Poorly.*

These are available (1989) from Book Sales, NZCER, Box 3237, Wellington at $10 each. Further reports will follow.

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Nolan, C.J.P. and Ryba, K.A. (1986) *Assessing Learning with LOGO*, Eugene: International Council for Computers in Education.

Papert, S. (1980) *Mindstorm: Children, computers and powerful ideas*, New York: Basic Books.

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Beginning to Learn Fractions

By **Robert Hunting**
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7/16ths, is it bigger or smaller than 8/17ths?

Fractions are notoriously difficult. Difficult to learn and difficult to teach. I have carried out, with help, some research which throws light on the questions 'When should we begin teaching fractions?' and 'What should our first lessons be like?'

A Typical Preschooler

Sarah is asked to cut a piece of macrame string into skipping ropes for two small dolls. She is told that the ropes will have to be the same or the dolls will be unhappy. Sarah cuts the string at about the mid-point. There is no sign that she made any preliminary estimation, no eye-movements nor physical folding of the string. She tells the interviewer that the dolls will be satisfied, but does not check the accuracy of her results. A follow-up problem is given: a longer piece of macrame string is to be shared evenly between *three* dolls. Sarah makes *three* cuts this time, resulting in three roughly equal pieces which are distributed to the dolls, and a smaller piece, which is ignored. Again there is no evidence of estimating nor of spontaneous checking after cutting. However she trims a small piece from the longest piece after being asked if the dolls would be satisfied.

Twelve cracker biscuits are to be shared evenly between three dolls. Sarah begins by giving out a single cracker to each doll, then stops. When the interviewer reminds her to give out all the crackers she continues giving out one cracker per doll in a systematic rotational cycle until all crackers are apportioned. Sarah moves the piles close to one another and compares their heights when asked if each doll has the same amount of crackers.

The interviewer rolls out a ball of playdough into a sausage shape and asks Sarah to cut it in half. Before giving Sarah a knife, he asks her to say how many cuts she will make (she says two) and how many pieces she will get (two). Sarah takes the knife, carefully places it near the mid-point of the sausage, and cuts. She then continues to subdivide each resultant 'half', until she has eight pieces.

A set of 12 picture swapcards is handed to Sarah, who is asked to help put half the cards in an envelope. Sarah places the cards down on the table, picks up eight of them, and places these in an envelope. She does not sort or count the cards.

Sharing, and the Dealing Procedure

The beginning of knowledge about fractions is in the action of subdividing, together with talk about the results. The social activity of sharing is very important. Through sharing, and the methods that children use to make equal shares, deeper meanings for fractions can be taught.

To teachers it is crucial that children learn to share into precisely equal amounts and that they learn to associate the special vocabulary of fractions with the number of equal parts created. However, my research with Chris Sharpley has shown that young children think about sharing in several different ways, depending on the social setting. For many children sharing does not necessarily mean that each recipient will be allocated a portion. Three dolls can share two skipping ropes if the dolls agree to pass the ropes around, just as humans do! Young children do not universally believe that a quantity to be shared is absolute. If the situation demands it, it is reasonable to expect more biscuits or milk will be provided from somewhere. Alternatively they may choose to ignore some of what has been provided. Amounts that are shared may depend on what the child considers appropriate, and what is appropriate may have, to them, nothing to do with using up the whole, nor with the creation of equivalent sub-units. For example, many children stopped sharing out after giving only one cracker to each doll. This was because of the size of the dolls; small dolls don't need lots of large crackers.

Bearing in mind that commonsense may lead to various ways of sharing, we found that 60% of pre-schoolers in one study of over 200 possessed a cognitive capacity we call the *dealing procedure* – a powerful systematic method for subdividing a collection of items into equal fractional portions or units. An analysis of the *dealing procedure* shows three nested components. The primary action is a matching of item to recipient; for example, one cracker to one doll. The secondary action is the completion of a cycle: the action is repeated until all dolls have received a cracker. If there are crackers left to be allocated, the cycle itself is repeated. Repetition of the cycle is the third component.

The dealing procedure has some interesting features. First, the method guarantees that each recipient will receive an equal number of items, even though the child very likely does not know how many items each recipient has received, particularly if each share has four or more items. Young children can successfully subdivide a collection into numerically equal

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subsets even though they themselves are *pre-numerical*. Many four and five year old children check whether the dolls have fair shares of crackers by comparing the heights of the piles, rather than by counting the crackers in each pile. Second, the dealing procedure works for any number of recipients; it is a general procedure which transfers to many different problems. Third, the dealing procedure will work for *any size* collection to be shared between *any number* of recipients. This feature is crucial for developing knowledge about fractions. The concept is relativistic. For example we can have one third of a collection of six (two), and one third of a collection of 39 (thirteen). The size of the fractional unit varies according to the size of the initial whole. Therefore the dealing procedure is a very attractive base, full of action and meaning, for the mathematical language and symbols used to represent fractional numbers. This is particularly true for unit fractions such as ½, ⅓, and ¼.

Sharing and Counting

A generally held belief that fractions should not be introduced until around 8-years-old or even later is under challenge from recent research. Conventional wisdom has it that since rational numbers are an extension of the whole numbers, children should become familiar with whole numbers first, in the early years of schooling. However the dealing procedure is widespread among young children. This means that many have effective means for creating equal fractional quantities. Appropriate vocabulary for identifying such quantities can be introduced naturally, as we shall see. Our observations were that many who can successfully share up a collection using the dealing strategy do not have well developed counting skills. In fact, the reverse of conventional wisdom often prevails; sharing, using discrete elements, is ideal for stimulating counting.

Furthermore, if teaching basic fraction concepts is left too late, children's knowledge of whole-numbers can dominate their interpretation of fractions. For example, ⅕ is thought to be larger than ⅓ because five is larger than three. Also, by the time children reach the second grade, counting is probably an integral part of sharing out a collection. Eight-year-olds who observed younger children dealing out items thought that it was necessary to count the resultant piles in order to make the piles equal. There are elements of both activities which are mutually beneficial. The one-to-one matching of item to recipient (in sharing) is intrinsic to successful counting, and counting can be used to quantify the size of a share, and later, to assist to predict share sizes. Fundamental mechanisms for learning whole numbers and fractions appear to develop side by side and interact, suggesting that initial instruction in whole numbers and fractions ought to be parallel and related.

The Fraction One Half

One half is a special fraction for children. Knowledge of this fraction appears to become established at an early age compared with other fractions. Children in the middle and upper primary years use it as a reference number when comparing other fractions. Children passing through the primary school must understand one half (as well as other fractions) at least at a *quantitative* level. The next sections explain how to get to this level, and what happens beyond it.

Categories of Meaning for One Half as a Qualitative Unit

This is a stage children go through before they understand one half as a mental object that can be represented precisely. Categories 1 to 4 are about continuous quantities such as lengths of string and licorice sticks. Categories 5 to 8 are about discontinuous quantities.

1. One half as a multiple sequence of subdivisions. Preschoolers often don't know when to stop. Some when asked to cut a length in half will subdivide by means of a *sequence* of cuts commencing at one end. Others will make repeated halving actions, making a subdivision at about the mid-point followed by further cuts at about the middle of each subsequent portion. There seems to be either a lack of awareness of 'one half' as implying just one cut, or no notion that a distribution process (to only two people) must follow. If you have a school child who, when asked for a half, subdivides in this way, then the best way to help is to find problems that provoke alternative means of responding – such as using symmetry for producing two near-equal quantities (e.g., cutting a paper chain of 2 dolls apart), or how to compose the multiple pieces they produced before into two lots.

2. One half as a single subdivision where there is gross inequality between each part. Children in this category may lack experience of the social imperative for equal shares. They may have shared with other people who are physically different in size, and so expected unequal shares. A simple activity is for one child to cut a food item into two pieces and for another child of the same age to have first choice (I cut, you choose).

3. One half as two subdivisions with remainder. In this category there is some attention to equality after the first cut – usually the child cuts a small part off the larger and ignores the remnant. Activities to promote the idea that the two halves must exhaust the material could include sharing a highly desirable object, such as a food item, or sharing a task where everything must be moved, such as shifting all of a load of wood or bricks.

4. One half as a single subdivision, all the material is used, and there is attention to equality. This is what we are aiming for. Estimation and checking are seen either before or after. There are eye movements darting back and forth between endpoints of the material as an estimate is made of the mid-point, back and forth movements of a finger or the cutter before doing the subdivision, and adjustment after the finger or cutter has been put in place, just before subdivision. A child who makes a first subdivision, checks the resulting portions by direct comparison, then proceeds to trim one or both pieces in order to equalize the quantities (not discarding the remainder) demonstrates an awareness of equality critical for a *quantitative* conception of one half.

5. One half as an unequal subdivision of a collection of items, no dealing. This is the case of the child with no systematic dealing procedure. This prevents a successful solution. Progress will be limited until a systematic dealing procedure matures. Social activities are needed. Try games and talking about the relative merits of systematic versus non-systematic dealing procedures.

6. One half as an unequal subdivision of a collection of items, with dealing. This is the case of a child who has a method for dealing in a systematic way, but has not associated this with the words 'one half'. Unless there is deliberate action by a teacher or parent enabling the child to bring actions and words together, progress will not be possible. Try playing with a collection of, say, toy farm animals asking for one half to go in one yard, the other half in the other yard.

7. One half as an equal subdivision of a collection of items, a result of visual check or estimate. As in Categories 3 and 4 the child may divide the items up and guess by the size of the stack or heap that they are equal. More sophisticated means such as counting or systematic sharing processes are not used, not seen to be appropriate. Has the child developed a dealing procedure? If not, social interactions – games and talk – about systematic and non-systematic deal-

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ing procedures would be beneficial. Try the notion of 'fairness'. If a dealing procedure is available, the farm game in Category 6 would be in order.

8. One half as an equal subdivision of a collection of items, using a dealing procedure. This is what we are aiming for. This child will confidently share a collection into two equal lots using a systematic dealing procedure and count to check that the outcome is right.

The next step in the child's progress will be to predict the size of the fractional unit using whole number facts and relationships. Social interactions should be planned so that the child will think about the function counting serves after the dealing is over. Counting is *not* necessary to determine whether the portions are equal; the dealing procedure guarantees that, but counting will confirm how many items are in each half if you didn't already know before you began. Children who can use whole number knowledge (and in particular doubles and halves), to anticipate the outcomes of problems involving finding one half of (small) collections understand one half as a *quantitative* unit.

A Structured Learning Environment for Introducing Fractions: The Farm

To bring this research to classroom practice here is a farmyard learning environment as a framework or template. The Farm is a robust framework because it lends itself to a range of levels of questioning and discussion – including situations that you can return to with the same group of children, or a different group, so that progressively more advanced ideas can be explored. The farm is suitable for children aged 5 to 8 years.

The farm has several advantages over subdividing a length of string or a sheet of paper. First, young children have effective ways of making equal shares using a systematic dealing strategy. Second, the created shares can be made precise, which is important for developing at the same time the concept of equality. THird, the teacher can evaluate a child's progress more accurately; unequal parts in the continuous case may as likely be the result of poor technique as immature conception of equality. Fourth, informal discussions of equivalence arise naturally, for example, one half, two quarters, and six twelfths of 12 sheep all number six sheep.

There are three phases to *The Farm*. In the first phase questions and activity center around developing confident dealing procedures (leading to equal subcollections). In the second phase the teacher assists the children to associate the conventional mathematical language of fractions with the results of subdivisions of collections of farm animals. In phase three children explore part/whole and whole/part contexts where the size of the 'wholes' varies. Assess how competent each child is, then begin them at the right phase.

Materials Needed

A rural mat or sandbox, play animals such as ducks, chickens, cattle, sheep, pigs, horses etc. Other useful materials include fences for making pens, yards, or paddocks, trees, buildings, toy trucks for transporting animals. Small groups of children can design and draw their own farm layout on large sheets of paper. One group might plan a three field farm; another group a four field farm, and so on.

Sample Discussion Starters

The following are indications of the sorts of questions and activity that might take place.

Phase 1: Consolidation of Sharing Processes
Here is a suggested introduction:

The farmer has just bought a farm, but he hasn't got any animals. So he goes to the saleyards and buys some pigs.

Let's load the pigs on the truck and take them home to the farm. The farmer has two yards and he wants each yard to have the same number of pigs. Can you put the pigs in the yards?

Allow a child to distribute the pigs, then ask:
Is there an equal number of pigs in each yard?
Why or why not? (Allow different children to respond).
Who thinks there is? Who thinks not? (These questions provoke attention to methods of checking).

Discuss and contrast systematic one-to-one cyclic methods, many-to-one cyclic methods, and trial and error methods as they arise. Encourage children to distinguish these different methods, and explain in their own words why a systematic method is superior.

Phase 2: Integration of Language and Action
One day the farmer bought some chickens (for example). *Here they are on the truck* (indicate). *He has two chicken coops.*
Can you help me put half the chickens in one coop, and half the chickens in the other coop?
Discuss what should be done. Allow a child to distribute the chickens.
Is that half the chickens? (Point to one coop).
Why or why not?
Encourage individuals to explain. Invite other children to evaluate the responses given:
(Child's name), do you think that's right?

Similar problems can be posed where animals are to be placed in three and four yards. Use the words one-third, and one quarter (one-fourth can be used interchangeably with one-quarter).

Phase 3: Extension to Reverse Problems, Variable Unit Sizes, and Notation
Place a small number (three, say) of animals in a paddock and say:
The farmer has lost some of his ducks because the fence was broken. These are the ducks left (indicate). *These are one-half of all the ducks that were in the yard. How many ducks did the farmer have at the beginning?*
The above type of problem can be repeated using a different unit size (for example, five).
After selling one-half of his pigs to his next door neighbour, these are the pigs the farmer has left (indicate). *How many pigs did he have to start with?*

If children find these reverse problems difficult, act out the situation using the total number at the outset. Such problems can be extended using ONE-THIRD, ONE QUARTER; also fractional units of varying quantities (for example, ½ as three animals, four animals, five animals, etc). Able children can attempt similar problems solving non-unit fractions such as ⅔, ¾, ⅖. Fifths may even be introduced.

Other Environments

Other settings that are suitable for use with the three phase framework described above are introduced below. Space will only allow us to indicate how the first phase, Consolidation of Sharing Processes, begins.

The Birthday Party

Today is Jenny's birthday and she is six. She has brought along some food and some party things (biscuits, cake, balloons, hats, whistles etc).
There are four plates and each plate needs to have the same number of biscuits on it. Can you put the biscuits on the plates? (Allow a child to distribute the biscuits).
Is there an equal number of biscuits on each plate?

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Mary's Garden

Each child in the group has their own set of materials: a shoe box containing soil, 12 red flowers, 12 flowers of mixed colours, 4 vases, and some popsicle sticks to make borders.

Mary Mary quite contrary wanted to have a beautiful garden with flowers in it (give children shoebox with soil).
This is what her garden looks like.
Early this morning Mary went to the nursery and bought all these flowers to plant in her new garden.
She has two special areas where she wants to plant all her red flowers (give children 12 flowers each).
Can you plant the red flowers so there's the same in each area?
Show me.
Is there an equal number of red flowers in each area?

Final Comment

In our research we asked questions about young children's ideas about fractions, identified an important intellectual tool called the dealing procedure, and advanced our understanding about the scope of children's knowledge of the fraction one half. Although we are not sure exactly how the dealing procedure develops, we believe teachers can use it to establish sound, durable fraction knowledge.

Traditionally books and maths equipment in primary schools have features-recognition activities (in contrast to constructive activities). For example, worksheets or textbook pages have emphasized memorizing links between symbols and pictures of fractions, such as shaded geometric shapes. Where manipulative materials were used these had subdivisions already on them. While all these materials have value, they are insufficient if children do not have the opportunity to develop and apply their own procedures for subdividing quantities. If a child is successful at recognition tasks this can lead to the false assumption that the child understands the concept.

More important than texts and equipment are the verbal interactions between teacher and child, and child and child, as different approaches to problems are discussed together. The adequacy of each child's ideas are, this way, tested against the ideas of others.

The distinction between continuous and discrete quantity settings and materials, cutting string and sharing crackers, is important. It is possible to subdivide a continuous whole such as a strip of paper into three approximately equal segments, though this is not an easy task. Alternatively you can subdivide a row of 15 buttons into three equal subgroups, and the outcomes seem to be essentially the same. However, from our work with both younger and older children we know that the mental processes used to make subdivisions are different in each case. In the discrete case children initially use dealing or partitioning strategy. Later, more powerful whole number multiplication and division relationships are substituted for the physical sequence of actions. In the continuous case, children use halving, where symmetry of the material is used, or informal measurement processes involving the estimation of a unit, its reproduction, followed by check and adjustment. These informal processes are difficult to develop into further mathematical knowledge.

Many teachers and parents comment that the sharing situations children experience in the home are predominantly of a continuous nature – for example, dishing out soup or pudding. Teachers rely heavily on continuous examples, such as cutting up an apple into halves and quarters. Yet our research indicates that where continuous and discrete materials are both available, children seem to prefer discrete materials. Most soup is dished out by the ladle-full, and potatoes are easier to dish out in their jackets than mashed! Certainly children achieve more accurate results using discrete material. We have to conclude that continuous experiences are important because of the child's prior knowledge base, but for fractions discrete materials should be emphasized because children have effective methods for making equal fractional units. Discrete materials allow the relativistic nature of fractions to be expressed in contextually varied ways to assist in the development of equivalence ideas.

Notes

Dr Robert P. Hunting is a Science Lecturer in Education at the School of Education Centre for the Study of Curriculum and Teacher Education, La Trobe University, Bundoora, Victoria, Australia 3083.

The research on which this *set* item is based can be found in detail in
Hunting, R.P. and Sharpley, C.F. (1988) Fraction knowledge in preschool children, *Journal for Research in Mathematics Education*, Vol. 19, No. 2, pp. 175-180.
and
Hunting, R.P. and Sharpley, C.F. (1988) Preschoolers' cognitions of fractional units, *British Journal of Educational Psychology*, Vol. 58, pp. 172-183.

The term *pre-numerical*, meaning the development of a child's counting competence in its early stages is discussed and defined in
Steffe, L.P., von Glasersfeld, E., Richards, J. and Cobb, P. (1983) *Children's counting types: Theory, philosophy, and application*, New York: Praegar Scientific.
and
Steffe, L.P. and Cobb, P., (1988) *Construction of arithmetical meanings and strategies*, New York: Springer Verlag.

That whole-number knowledge can come to dominate children's concept of fractions (one-fifth being regarded as larger than one-third) is discussed in
Hunting, R.P. (1986) Rachel's schemes for constructing fraction knowledge, *Educational Studies in Mathematics*, Vol. 17, pp. 49-66.

That counting is integral to sharing out by 7 years old is discussed in
Davis, G.E. and Pitkethly, A. (in press) Cognitive aspects of sharing, *Journal for Research in Mathematics Education*.

The relationship between counting and sharing is an important one and needs further investigation. See
Pepper, K. (1989) *The relationship between preschoolers' knowledge of counting and sharing in discrete quantity settings*, Masters' thesis in preparation, La Trobe University.

The three stages of knowledge of fractions – as a qualitative unit, quantitative unit, and abstract unit is discussed in detail in
Hunting, R.P. and Davis, G.E. (1989) *Dimensions of young children's knowledge of the fraction one-half*, Manuscript submitted for publication.
and in
Bigelow, J. Davis, G.E., & Hunting, R.P. (April 1989) *Some remarks on the homology and dynamics of rational number learning*. Paper presented at the Research Pre-session of the National Council of Teachers of Mathematics Annual Meeting, Orlando Florida.

The Farm. The application of the research to classroom practice was begun in
Hunting, R.P., Lovitt, C. and Clarke, D.M. (April 1987) *The foundations of number learning project: Where research, children, and teachers meet*. Paper presented in the symposium Early Mathematics Learning: Teacher-focused Curriculum Change, American Educational Research Association Annual Meeting, Washington D.C.

A discussion of language factors affecting early fraction learning can be found in
Hunting, R.P., Pitkethly, A., & Pepper, K. Language carriers and barriers in early fraction learning. In R.P. Hunting (Ed.), *Language issues in learning and teaching mathematics*. Forthcoming monograph.

That children prefer to deal with discrete (countable) material when they have the choice is demonstrated in
Hunting, R.P. and Korbosky, R.K. (1989) *Context and process in fraction learning*, Manuscript submitted for publication.

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set research information for teachers
number two 1989

Teaching Economics Using the Media as a Resource

By **Alan Gregory**
Monash University

John Kelleher

ECONOMICS is so pervasive in modern life that economic questions and issues cannot be avoided. If young people do not have a basic understanding of economics they will be confused and misinterpret much of the world around them.

The media makes it almost impossible to avoid economics and by reflecting and portraying the issues and events that make up and concern society it is constantly spelling out an economics agenda. Thus the media is an important source of material to stimulate economic thinking.

All kinds of media material are sources – newspaper cuttings of current economic events, television news or feature programmes, cartoons, statistical data, and historical material. All these can be used profitably to add interest and relevance to economics lessons, but it is not a straightforward task. Economics is not portrayed by the media with schools in mind. An examination of how economics is portrayed will help, and using this analysis will assist in the development of economics curricula.

Background Social Statistics

Most people referring to mass media have in mind three elements – newspapers, radio and television. (Marshall McLuhan has a wider interpretation – describing sixteen forms). Although television is the newest of the principal media, it commands the greatest attention of all the media forms.

Australian data (from McNair Anderson surveys) suggest that in Australia women view 21.5 hours of television per week, men 18 hours, teenagers 20 hours and children under 13 years 18 hours per week. The potential to view is large in Australia too, with some 445 hours of television transmission a week compared with around 200 hours per week in the U.K. and Europe.

Put another way between 30%–45% of our children are regularly watching television betwen 5.00 p.m. and 8.00 p.m. most week nights.

Dunn's 1983 study of primary school children suggested that television was the main source of their economic knowledge; parents, newspapers and the school being the next most important sources.

Teaching Economics

The aim of this *set* item is to point out how to make use of what is there. Young people are bombarded with economic concepts, and are receiving through media exposure some form of economic education. With teaching this bombardment can make better sense and be put to better use.

Newspaper coverage

TV, though dominant, is not the only source of economic information. A survey in 1983–84 of the economic content and concepts in the Melbourne Age found 5546 economic items in 120 days. There was not only a significant amount of straight economics but also a wide range of economically relevant items – industrial relations (strikes and disputes) the overall state and regulation of the economy, 'hip pocket nerve' items (pensions, unemployment benefits, taxes and welfare).

Table 1
Economic Terms by Category
(*Age* Survey 1983–84)

CATEGORIES	*TERMS**
1. Basic terms and concepts	904
2. Production, consumption and investment	885
3. Population and labour	159
4. Industrial relations	1347
5. Overseas section	246
6. Money and finance	264
7. Role of Government	1574
8. Comparative economic systems	99
	6478†

*Only *first* mention of a term or item in an article is recorded.

†Double counting of items belonging to more than one category hence total exceeds the 5546 which was counted for single items.

The ability to read a daily newspaper (of reasonable standard) intelligently could well be a working definition of economic literacy.

Television Coverage

A study of the economics content of news and current affairs programmes on Melbourne television was made in 1986. A sample of programmes was taken over the year, varying the channel, varying the week night, and the balance between news and current affairs programmes. Of the 125 programmes, 70 hours of viewing, 72% were news and 28% were current affairs.

Table 2
Classification of Items on TV, 1986

	No.	*%*
1. Accidents	89	4
2. Human interests	286	13
3. Government	216	10
4. Economics and Business	339	16
5. Sport	97	4
6. Weather	88	4
7. Crime and Courts	221	10
8. Health and Medical	52	2
9. Transport	1	–
10. Social Conflict and Welfare	59	3
11. Education	12	1
12. Lotto	16	1
13. Melb. in Brief World	22	1
14. Melb. in Brief Australia	20	1
15. Religion	15	1
16. News Headlines – Summaries	309	14
17. Advertisements	271	12
18. Other	79	4
Total Items	2192	100

Despite the exciting news events of 1986, the peoples' ousting of Marcos in the Philippines, the US bombing of Libya, Halleys comet, Prince Andrew's wedding, Lindy Chamberlain's release, the Revkjavik Summit, the Pope in Australia and New Zealand, the Challenger explosion, despite these events and plenty of local murders and politics, economics topped the list of TV topics.

Eighty-six percent of all programmes had some economic items within them. Economics items were showing for 18% of all programme time.

Many news or current events items are not at first glance about economics but economic implications or factors get a mention. For example, a proposed North to South crossing of Australia in a solar powered car was a news item on the Channel 10 news on 28 October 1986. It was the 18th item on the news and went for 1 minute 38 seconds; and comprised 3% of the programme and was classified as a human interest story. However, questions of the costs of the car, costs of production and technology were raised.

In sections of programmes classified as Government/ Politics, there were 132 economic items in 86 programmes. In other categories there were an additional 368 economic items.

Typically economics items comprised 24% of the time of a programme. In two cases the economic component was 45% of programme time and in some other programmes there were no economic items. Economics items took up 12% of news programmes but on current affairs programmes took 50% – half the time. The average time of an economics item was 2 minutes 72 seconds with 57% being under two minutes.

The order in which items were presented was also examined. Clearly the items considered most newsworthy would be presented early in the programme.

The main 367 economic items found in this survey were analysed to find which economic components were involved. The same categories were used as in the earlier newspaper study. The general pattern, shown in the newspaper study, of the dominance of industrial relations and government issues prevails, with industrial disputes and government economic policy issues being regarded as the most noteworthy items.

General observations

While this study reveals a considerable coverage of economics in news and current affairs programmes, a feature of this coverage was that in most cases the economic terms and concepts were rarely explained. The presentations assumed a considerable background knowledge of the issues. Even abbreviations were used – such as C.P.I. (meaning Consumer Price Index) which were not spelled out or explained.

Compared with newspaper news the pressure of time on television news means that a relatively cryptic presentation makes the most newsworthy use of the 2 minute slot. Television news reporting is typified by overcompressed verbal shorthand and unclear language. Graphs, tables and diagrams can be excellently presented on TV. They help make points but cannot be examined in detail.

Some items seem to have been over-represented. Industrial relations matters were a clear example of this – and for this sample of some of the 1986 programmes the Victorian B.L.F. (Building Labourers Federation) registration issue and the nurses dispute took up much time. There was often repetition of material, and such disputes also had appeal to programmers since they provided the opportunity for film as well as 'talking heads'. It was interesting to note the change on the presentation of the nurses dispute. Initially the television channels were sympathetic to the nurses and took an anti-government stance. As the dispute lengthened the mood changed and an increasing number of segments appeared depicting inadequate patient care and picket line troubles.

Some stations had a specific financial programme presented in a consistent format. For example SBS had a regular feature on the Stock Exchange. Qualitatively the economic coverage on Channel 2 seemed better than other channels. It was better in the sense of a greater priority being accorded to economic issues and there was more care in presenting economic terms.

On television, news and current affairs programmes are generally regarded as a source of entertainment. Research indicates that for both adults and children, recall of news events is very poor. Only items of personal relevance seem to be retained. News is not of great interest to children. While each viewer seems to have a 'capacity for idiosyncratic interpretation that is almost infinite' it is what the viewer brings to watching television that will determine what such a viewer gains; 'children can make what they wish out of any programme they see.' Cullingford gives a picture of children watching television responding from their own clues and expectations, selecting by the associations that they possess.

There is a capacity for children to learn more from their exposure to television. So the presence of so much economics on television represents a potential for learning economics – for it would seem that such items will only properly register if linked to previous interests and understanding. Two techniques for teachers flow on from this: first, children can be asked to watch a particular programme; second (and much more successfully) video taped items can be re-run in class.

Future Work

1. These studies of economics in the news media point to the need for teachers and anyone developing an economics curriculum to take into account the nature and range of economics concepts and terms in society, especially those that are being reflected in our media. There is a wealth of opportunity to use these economics concepts to understand society.

This study, dealing with economic concepts in television news, and its predecessor dealing with economics in a newspaper, could well be replicated, with a wider range of newspapers, magazines and television programmes examined. However such studies would probably only confirm the general proposition; there is a considerable amount of economics, and a range of economic issues, in the media.

2. Cullingford in his research on children and television comments, 'The content of television is far easier to analyse than what goes on inside people's heads'. So the next step should be the complex area of response. How do young people react to these economic concepts and terms?

A small pilot study was undertaken to explore this question. At a secondary girls school in surburban Melbourne sixty senior students taking economics in Years 11 and 12 (Forms 6 and 7) participated in a short experiment. The aim was to assess their comprehension and understanding of the economics items in the news. News programmes were recorded over five nights (a different channel news each night) and the items with economics content were shown to the students next day. Test questions were constructed on the items to assess whether the students understood or did not understand the economics concept involved. After the test there was a discussion within the class.

Even just five programmes during May 1987 revealed a considerable number of economic items. The teacher observed:

1. The students were surprised at the number of economic items in the news.
2. The students realised that their recall of news items was poor and short term. Many also said they tended to tune in and out.
3. The students were disappointed with how few of the questions they could answer. While their understanding of items which were related to the economics dealt with in their course was good, overall they revealed a low level of understanding.
4. Much of this lack of understanding could be attributed to this exercise coming early in their course. However, the students commented on how little items were explained. Becoming aware that so many items were a bare statement without elaboration emphasised to the teacher the need for students to have more background.

While this study was exploratory only and the impressions from it much be treated cautiously it does suggest that study in class of how young people receive economics concepts can be profitable.

Notes

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The study of TV coverage of economic matters is written up in much greater detail in a paper *The Media As a Course for School Economics Curriculum* presented to the Joint AARE/NZARE Conference, Christchurch, December 1987

Alan Gregory records his thanks to Anita Forsyth, Heather Ewart, Kirsty Williamson, Jenny Hoff, Margaret Wilson, Sharon Fitzgerald, John Fyfield, and Bev Schneider for the considerable help with the project. Margaret Wilson kindly assessed her class in the small Pilot Study described. He also acknowledges, with thanks, a research grant from the Vice Chancellor of Monash University towards this study.

Background Social Statistics

The McNair Anderson surveys for school aged children can be found in

McNair Anderson (1984) Report of Commercial Television Audiences Aged 5–12 years and 13–17 years: Comparative data Sydney and Melbourne, Monday to Friday, *Media Information Australia*, 33, August, 1984, pp. 21–27.

Dunn's survey is

Dunn, G.N.D. (1983) Economic understanding and economic efficacy of elementary school children. Unpublished M.Ed thesis. Monash University.

General Observations

The typical overcompressed verbal shorthand of TV news is examined in

Harrison, M. (1985) *T.V. News: Whose Bias?* Hermitage: Policy Journals.

That for both adults and children recall of news events is poor is detailed in

Cullingford, C. (1984) *Children and Television*. Aldershot: Gower Publishing.

This book is a mine of information. The quotations are from it and also the positive finding that children can learn more from their exposure to television.

Further reading

Along with Cullingford's book just mentioned the following are useful source books and interesting further reading:

Bell, G.J.M. and Gregory, A. (1980) *Sources for Courses: A Handbook for Teachers of Economics*. Fitzroy: VCTA Publishing.

Galbraith, J.K. (1978) *Almost Everyone's Guide to Economics*. Harmondsworth: Penguin.

Gregory A. (1982) 'Using a Source Materials Approach to Economics' in *Economics*, Vol. 18, No. 7, pp. 27–29.

Saunders, P., Bach, G.L., Calderwood, J.D., Hansen, W.L. (1984) *Master Curriculum Guide in Economics: A Framework for Teaching the Basic Concepts*. New York: Joint Council on Economic Education.

Weisbrod, B.A. (1978) 'Research on Economic Education: Is it Asking the Right Questions', *Discussion Paper No. 510–78* Madison: Wisconsin University Institute for Research on Poverty.

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set number two 1989

Networking Style:

How Principals Manage Curriculum Change

By Hank Schaafsma

Sydney College of Advanced Education

1. Introduction

THE OLD ADAGE, 'It's not *what* you know but *who* you know...', has more often been used to explain success in business than success in education. One educational indicator of who you know, 'The old school tie', is well known in business and politics. Recent research on principals managing the complexities of curriculum change in New South Wales schools suggests however that *what* you know *about* who you know', is in fact more critical.

Seven case studies of school principals who were involved in curriculum change over a two year period were conducted. The studies disclosed that all of the principals used some form of networking. Networking implies knowing people – knowing about how they teach is necessary for curriculum change.

Although there are many books and papers about social networks in all kinds of organisations, there is little research about the networks that exist in Australian schools. Moreover, most social research has described networks in functional terms: Networks have been a means for managers to improve their communication or manage change more effectively. My study suggests that networking (as an interactive process linking principal and staff) is much more than the exercise of power.

Teachers who are implementing a new policy or curriculum are in fact enmeshed in social networks that directly influence their teaching. Getting a new policy adopted by teachers depends not only on:

(i) How they *feel* about the curriculum change,
(ii) what they *do* about the proposed change,
(iii) how they *think* about the change, but also on,
(iv) who they *interact* with about this change.

Implementing a new policy or a new curriculum is a complex interactive process. There are many variables. Recent research has stressed that success depends on the actions of the principal to link people together for action. The people to link are those staff members who constitute the 'action sets' for a particular curriculum or policy change. The action sets are drawn from within the networks of the change facilitator, in this case the principal.

2. Key Concepts

Networks. A useful definition is 'a series of points, some of which are joined by lines. The points are people, or sometimes groups and the lines indicate which people interact with each other.

Networking (here) is social interaction in schools, that brings together people who share similar concerns, beliefs and values about implementing a particular policy, programme or curriculum practice together. Principals construct networks for different purposes. Some networks are therefore oriented to either 'external' or 'internal' interests and some to both.

Action sets. Principals construct internal (school) networks. From time to time, principals select teachers in their networks to implement specific policy or curriculum initiatives. Teachers selected for this specific purpose comprise an action set. Getting into an action set comes about in different ways in each school, partly as a reflection of the principal's 'networking style'. Successful implementation can be measured by the characteristics of action sets.

Networking style is the way that principals (and others) set about constructing and then monitoring the action sets. In some schools, the action set reflects the bureaucratic hierarchy of the school's formal structure; in others, the action sets are 'negotiated' by the principal through a form of guided democracy or are the product of initiatives of some staff.

The networking is most effective when it is *reflective*. This is achieved when participants are able to reflect on the process in which they are involved. Networking has the potential to become empowering for all. However, networking may also be manipulative, particularly when it controls the implementation outcomes. An analysis of networking style leads to critical reflection on the contexts for change in each school setting.

3. Understanding the Contexts for Networks in Schools

We can look at schools, or other institutions, and describe the social networks that are constructed among their members – staff, students and parents – to achieve specific objectives and to serve competing interests. In New South Wales, principals in public schools have been expected to implement a succession of new policy objectives and curricula that have emanated from the Head Office of the N.S.W. Department of Education. A case study methodology was used to make sense of the complex social relationships that principals had to work amongst to get the new policies moving. The networks and action sets underpinned the formal organisational and cultural contexts of each school.

Principals in N.S.W. operate within a three-tiered organisational system of policy making that was enshrined in the policy document, *Responsibilities of the Centre, the Region and the School in Curriculum Development (1985)*. According to these official policy guidelines, the school develops and implements a curriculum appropriate to its pupils within the framework of central and regional policies. Such guidelines place considerable demands on the school principal to have good 'contacts' with people at all three levels of the system – Centre, Region and School. Networking skills therefore become essential for policy implementation strategies.

Within each school context, the components of a principal's networking style were observed at different stages of curriculum change. First, the principal and staff negotiated certain policy and curriculum priorities for action – for each year or each term. During this phase the principal was able to identify which staff shared in the vision of policy or curriculum change. At the same time the more reflective principals came to realize which communication strategies would work best with some staff to ensure their co-operation. Those whose orientation was external to the school tended to delegate curriculum change to a 'second change facilitator' and concentrate their energies in building external networks – with parents, bureaucrats or other principals.

Second, after setting priorities for the school there emerged action plans for the staff to implement. Networking skills were used to facilitate the adoption and implementation of these plans. The more democratic/participatory networking style of several principals was evidenced by their efforts to develop cohesiveness in the small teams (the action sets). At this point principals differed in their networking intent. While some principals saw team building as a means of developing a coherent set of values and beliefs underlying new policies and practices, others mainly used their networks to manipulate and control the change process to achieve their own ends. For example the principal of Hollings public school admitted.

> I am going for a fourth List and so I had to get the (policy) documentation in order first... the staff have all worked very hard and we are exhausted...

Meanwhile the Inspector who confirmed the promotion of this principal later commented:

> What I got to know during eighteen months were principal A's big ideas – what I didn't get to see were the impact on the teachers in the classroom... there was little real implementation.

What neither the Inspector nor the principal heard was the level of disenchantment among the staff who believed that the principal's facade of participatory democracy was really an exercise in manipulative networking. 'You scratch my back and I'll scratch yours'.

The third and most critical phase of programme implementation is to change practices in classrooms. At this stage networking skills usually incorporate some reflection on implementation practices. Principals were asked to reflect on their current policy implementation practices in, for example, using computers in classrooms or introducing Aboriginal Studies in Social Studies.

Policy implementation was explained by principals at two levels. (i) At the level of *intervention* in the school, some principals only described *how* new policies were planned, implemented and evaluated. This was called their theory of practice in use. (ii) At the level of *justification*, principals explained *why* their actions were justified by Departmental requirements, contextual variables within the school and/or their own personal beliefs and values. This was called their theory of method in use. At the level of justification the principal's own networks helped to explain both action (or inaction) on some policies.

Finally, networking is part of any curriculum implementation process. Networking operates at all levels of the education system but in schools it has special characteristics. It is best understood as part of the unique contexts of each school. School networks are socially constructed and maintained through the dominant networking style of the principal. This may be illustrated with an example from the Bundene case study.

Principal B. of Bundene School in commenting on his school's priority for computers in schools said:

> Last year the parents, many of whom are successful businessmen, wanted to know why we weren't using computers in the school... Computers (I argued) will give our kids the competitive edge to get places in selective high schools *(sotto voce)* and private secondary schools.

Principal B had developed extensive networks with parents in the community. Not surprisingly he believed that it was the community rather than the inspector or staff who should determine priorities for policy implementation. His own personal interest in computers and technology for the school was explained by reference to community interests '...after all, its their kids and they're paying the taxes.!'

In the context of what he described as an 'upwardly-mobile' community, the parental pressures for success in all forms of achievement were used by the principal in promoting the Computers in Classrooms policy. Within the school his success in building an action set of effective computer users was measured by the 'Levels of Use' of computers by the staff. As Figure 1 illustrates, these ranged from a high of Level V to a medium of Level III on an eight-level scale.

Principal B's networking style may be described as *'bureaucratic'* because in the first instance he built networks that preserved the *status quo* of power and control within the school. Seniority was invoked to sanction the allocation of computers to Year 5 and 6 classrooms; drill and practice

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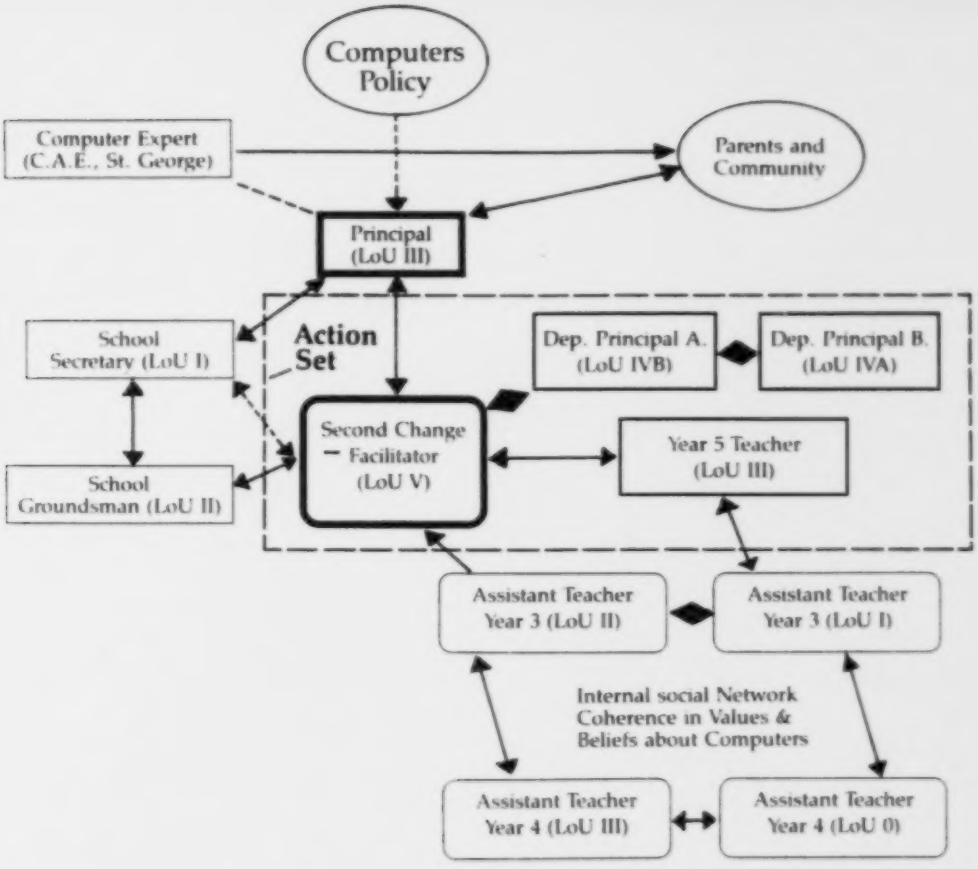

Computers Policy
Computer Expert (C.A.E., St. George)
Parents and Community
Principal (LoU III)
Action Set
School Secretary (LoU I)
Dep. Principal A. (LoU IVB)
Dep. Principal B. (LoU IVA)
Second Change – Facilitator (LoU V)
Year 5 Teacher (LoU III)
School Groundsman (LoU II)
Assistant Teacher Year 3 (LoU II)
Assistant Teacher Year 3 (LoU I)
Internal social Network Coherence in Values & Beliefs about Computers
Assistant Teacher Year 4 (LoU III)
Assistant Teacher Year 4 (LoU 0)

Figure 1. Mapping a Network for Implementing Computers in School (Bundene Primary School, 1983-1984)

of Maths and Spelling were seen as the main justification for the use of computers in the primary school curriculum.

The principal's beliefs and values were coherent with those of most members of Principal B's action set (particularly the two deputy-principals). However, they were strongly opposed by the second change facilitator who said, '... nobody here really understands the curriculum implications of computers beyond tables and spelling games. Neither the boss nor the majority of staff have really considered the more fundamental issues of computers in society in the future'. This teacher did some networking on his own and succeeded in mobilizing younger staff to critique the principal's policy and set up an alternative network that was partially in resistance to the dominant action set.

4. Networking Style and the Problem of Implementation

The belief that the individual teacher is basically a 'user' and the principal is a 'manager' of policy and curriculum change is too simplistic an explanation of the complexities of policy implementation at the school level. The school as an organisation does not operate as a company nor is it a small bureaucracy. More particularly, the narrow focus on the principal's leadership skills as 'facilitator' is, I believe, misplaced in today's schools. Schools are essentially sets of social networks. In schools, four different styles of networking may be operating. Each different networking style affects curriculum change differently.

The case studies of the seven principals provide considerable support for the proposition that each networking style is associated with different implementation outcomes. The following two examples illustrate aspects of each style and indicate how they affected implementation – in different ways.

Principal D of Burton School, although a self-styled 'facilitator of change' also demonstrated a predominantly *reactionary* networking style. This apparent contradiction became obvious when examining two dimensions of networking – agency and structure. Principal D. displayed limited knowledgeability and control (agency) over the policy implementation process in the school. For example, 'It's a pity that they got rid of the Blue book – you know the 1963 syllabus because it had everything in it.' His own innovation 'Direct Instruction in Reading' was five years old but still dominated his concern of 'back to basics'. Only four members of the staff were still using it! Meanwhile the other 'new' policies such as computers or non-sexist education had been delegated to 'committees who look after those things'. Structure was poorly defined and articulated. A comment from the Deputy Principal places the principal's style in context.

> *Deputy-Principal J.*: I don't want anything to do with Direct Instruction ... the material is American, sexist and highly-structured. When D. goes (retires) we shall quietly shelve it.

> *Teacher V (a member of the action set of four 'users')*: Principal D. asked me to coordinate the Reading Scheme because he knows that I too believe in the importance of Direct Instruction techniques and the underlying value of self-discipline that comes with this Programme. We have worked on this together for a long time (she was going for a List) so I know what he wants.

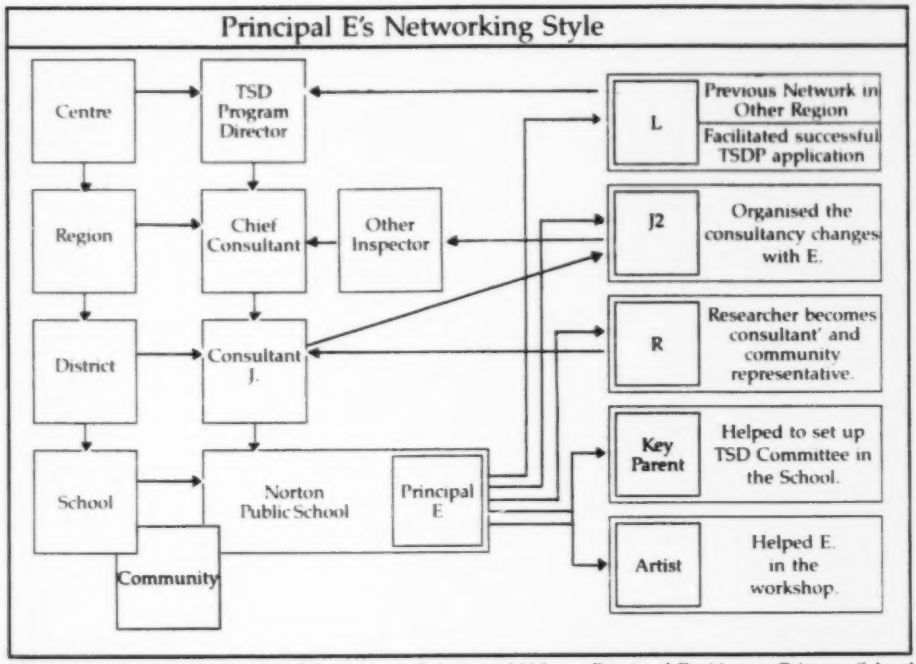


Figure 2. External Networks and Coherence in Beliefs and Values, Principal E: Norton Primary School

Principal E. at Norton public school, developed a networking style oriented to both external and internal networks. Her links outside the school were designed to obtain information and resources about the Total School Development Program (T.S.D.P.) through formal, (Departmental) channels. At the same time she developed her internal network by mobilizing key members of staff who were to be the 'action sets' for the new T.S.D.P. policy dealing with curriculum changes which they wanted in the school, (see Figure 2).

The first stage of the T.S.D.P. program at Norton public school was poorly implemented. This was in part due to a mismatch in the bureaucratic networking style of the externally-appointed consultant J. and that of principal E whose networking style was more *participatory* and designed to be *empowering*, for her own staff. The change facilitator (Consultant J) was appointed by Head Office to implement the T.S.D.P. policy at the School level in one Region. However, her values as well as her theory of method clashed with the principal and her staff.

The following extract from one interview is used to illustrate how the principal's networking style was able to circumvent this particular bureaucratic obstacle.

Principal E.: I may have to intervene in this planning process for this Workshop because of the way that J, is organising things... But then I received a phone-call from Inspector N who informed me that my old friend L. is coming in as a consultant. Remember, I told you about her; she is also a good friend of my Infant Mistress.

Researcher: Why did you decide on such a strategy?

Principal E.: We have far too much to lose. The staff and I have been meeting every morning and I know what they want.

Researcher: (several weeks after the Curriculum Workshop) Did you plan it this way?

Principal E.: (smiling) What do you mean?

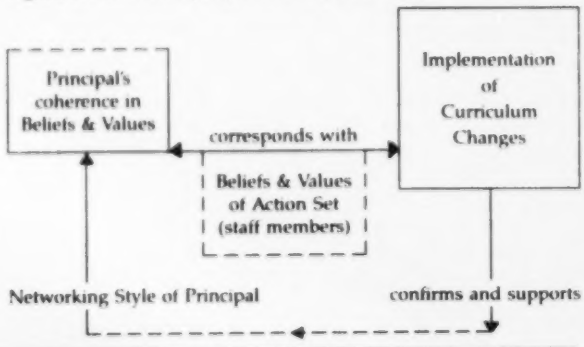
Researcher: Now that the curriculum priorities are changed again...

Principal E.: Oh yes. I knew what I wanted and so did my staff. Remember, they also tell me what they want and what they don't want. They (not consultant J) have to make it work.

The history of curriculum change at this school is particularly interesting. After one year of major upheavals and changes associated with the introduction of the T.S.D.P., the principal was promoted to an Inspector's position. The new principal who was appointed took the opportunity to implement his policy priorities (Maths and Science) and the T.S.D.P. (in Art and Music) ceased to be implemented.

Perfect implementation (the fidelity model of change) is rare in schools because beliefs and values of staff (and parents) are seldom fully aligned. Where there is coherence in values and beliefs (reflected as action sets), there is greater likelihood of more effective implementation. The complex relationship between networking style and implementation in curriculum change is set out in Figure 3.

Figure 3. Networking Style and Implementing Curriculum


Principal's coherence in Beliefs & Values
corresponds with
Implementation of Curriculum Changes
Beliefs & Values of Action Set (staff members)
Networking Style of Principal
confirms and supports

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5. Seven Components of Networking Style

Some networking styles work better than others. In my research I found seven components that have an influence on outcomes.

(a) A sense of vision and commitment to educational policy goals
Policies are visions of the future. Principals need to communicate their vision to all staff coherently. To translate vision into action first required finding those who shared the vision and were willing to make it happen. e.g., Principal G. of Penswick commented 'You know I'm a great believer in helping the under-dog, the under-achievers and these ordinary kids who don't get access to Disadvantaged Schools Funds... a few of us here (the action set) are now looking at this in our Social Studies Program.'

Coherence in shared beliefs and values about a new policy generally became the basis for the principal's action set. Effective networking helped to spread the vision among the staff and thereby enlarged the action sets over time. Effective implementation takes time and continuity in staffing.

(b) An awareness of one's own communicative competence
Good communication is needed to build alignment among competing interests within the staff and in the community. Case studies at three schools (Norton, Hollings and Burton) indicated that staff and community did not always share a similar vision of curriculum change. Principal E. of Norton commented regularly along these lines – 'I think a lot about what my staff say and what it means in running this school. I have learnt to listen and to make time available to listen to staff as well as parents... I often take a lot of paper work home.'

Although all principals claimed to 'know' their staff well, few principals were willing to examine *reflectively* the nature of their interaction with staff. That is, only a few, such as principal E. were aware of their own level of competence at communicating and how this influenced their networks in the school. Few recognised how their educational vision was value laden and how this affected their interaction with teachers as they tried to get new policies implemented.

(c) Personal knowledge about people in social contexts
Effective networking used a wide repertoire of communication skills. The principal (or other change facilitator) had to know people as people rather than as 'assistant teachers' filling a position or role. In smaller schools there was a greater likelihood that principals understood the nuances of negotiation and conflict resolution because they were directly involved on a face-to-face basis.

(d) A commitment to a coherent set of beliefs and values
In the language of some teachers, 'Knowing what the boss wants' was very important for membership in his or her network. Conversely, where there had been staff continuity (particularly by the principal), the principal knew a great deal about each staff member. It was often a case of 'what you know about who you know' and that created a shared commitment to a set of coherent beliefs and values. Networking itself, if it had become the ordinary way of interacting, also helped to change existing beliefs and values – over time.

(e) Skills and knowledge for working a bureaucracy
Older (male) principals claimed some expertise in 'using' their contacts to obtain information and resources; it had helped them. In reality, principals differed markedly: the networking style of some was oriented to people outside the school, others had internal networks and few outside. Several principals were surprised to find that success with the Department or with the community was not always matched with success in networking with their staff.

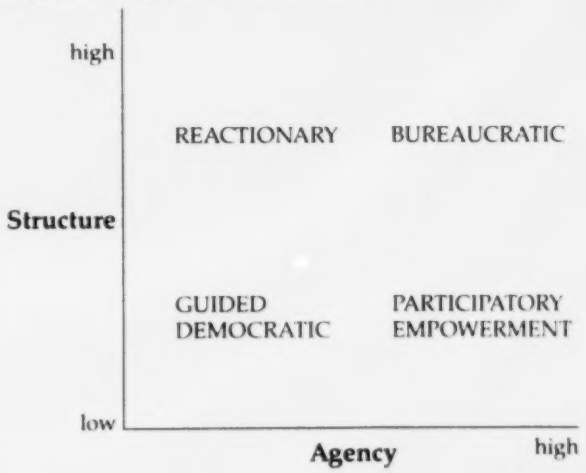
(f) A clear intent about the purpose of networking
Networking may be a strategy for subverting, manipulating, controlling or managing changes – if that is the principal's intent. Alternatively, networking in some schools became the means for an emancipatory process that led to the empowering of new groups within the school staff.

(g) Reflection on implementation practices
Reflection on networking had two dimensions. First, there was observing one's own practices in relation to others: for principals in schools this was often difficult as their work is idiosyncratic, formed in part by each school context. Second, reflection comes by performing the actions and the roles deemed to be most appropriate in the school contexts of change. Practising what you preach proved most difficult.

6. A Model of Four Networking Styles

In my research I found that each principal's style of networking had a number of the above components that stressed either 'agency' or 'structure'. 'Agency' refers to each individual's degrees of freedom to take control over a change process; 'structure' here refers to the institutional arrangements that exist within school contexts and through which control is exercised by the school principal or other 'change facilitators'.

Figure 4. Four (typical) Networking Styles



Principals in these case studies differed markedly in their networking styles, yet each admitted to some form of networking as part of their policy implementation strategies. What was of course most significant was the impact of each networking style on the policy or programme and its subsequent implementation.

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7. Conclusions

There is a relationship between a principal's networking style and the success of implementation of policies at the school level, however, the relationship is neither linear nor direct. Each case study of principals clearly illustrated how different configurations of networking style operated at the level of 'action sets' to produce the impetus to implementation and change at the school level.

Where a principal showed that he or she understood and took account of the shared beliefs and values of members of each action set, there was a greater likelihood that implementation would become more effective (using measured outcomes such as changes in 'Levels of Use' or 'Stages of Concern' about the policy). By contrast, where a principal acted as a bureaucratic functionary and ignored shared beliefs and values among action sets, policy implementation tended to be less effective or in the case of Bundene and Hollings schools, the staff themselves created action sets that opposed the principal's strategies for implementing curriculum change.

This research reinforces a number of important trends in the development, implementation and evaluation of curricula.

First, the unit of implementation of a school policy is neither the individual as a unit nor the school as a unit – rather it is the action set drawn from the principal's networks.

Second, networking style is a useful indicator of performance in the implementation of school-based policies or programmes because it provides a normative dimension to educational change. The most effective implementation of policies or programme was found to occur where the principal's networking style was emancipatory rather than bureaucratic in intent and where networking was an interactive rather than a reactionary activity.

Third, a focus on the coherence in beliefs and values among the action set members rather than merely describing how they act, gives due recognition to *why* people implement policies. That is, policy implementation cannot simply be reduced to actions or the behaviour (incidents, tactics, strategies etc.) of individuals but rather it recognises the reality of social networks in organizations and their underpinnings in shared beliefs and values.

Finally, networking skills, like other communication skills can be learnt and developed through training and simulations. A critical and reflective approach would focus on principals-in-interaction with their action sets. Such an approach could have implications for staff development practices at the school level.

Networking style therefore represents an important new dimension to the traditional models of principals as reflective practitioners involved in educational change. The major implication for principals who seek to implement policies or programmes more effectively is for each to consider their current networking style. Whereas a reactionary or bureaucratic networking style may lead to 'mechanical' forms of implementation, there is new evidence to support the proposition that more effective forms of implementation can be achieved by more democratic means, particularly where the principal's intent is to empower staff to develop, implement and evaluate school-based policies.

Notes

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